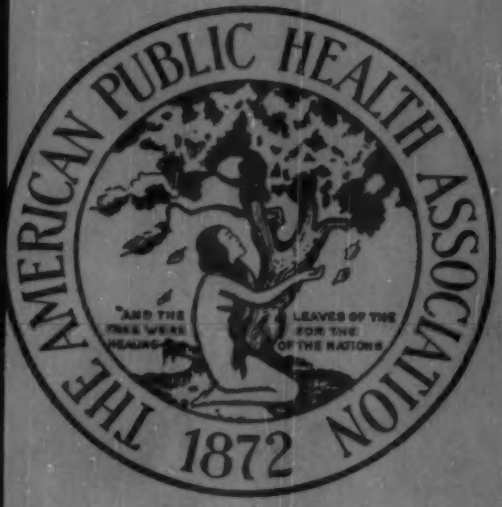
American Journal of

PUBLIC HEALTH

and The Nation's Health



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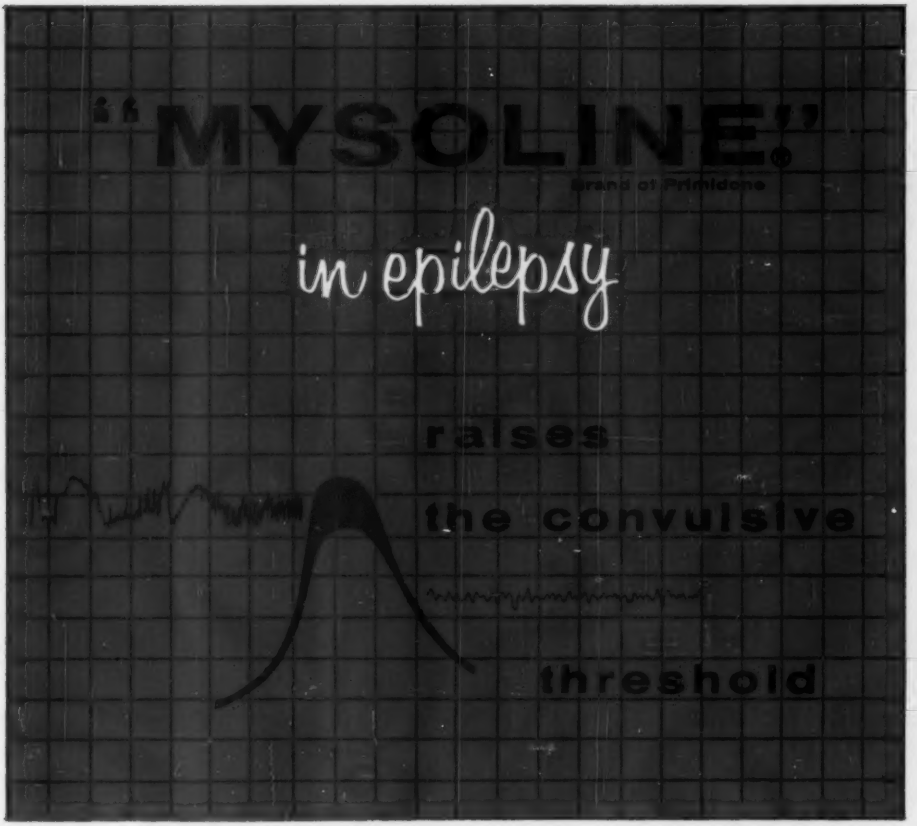

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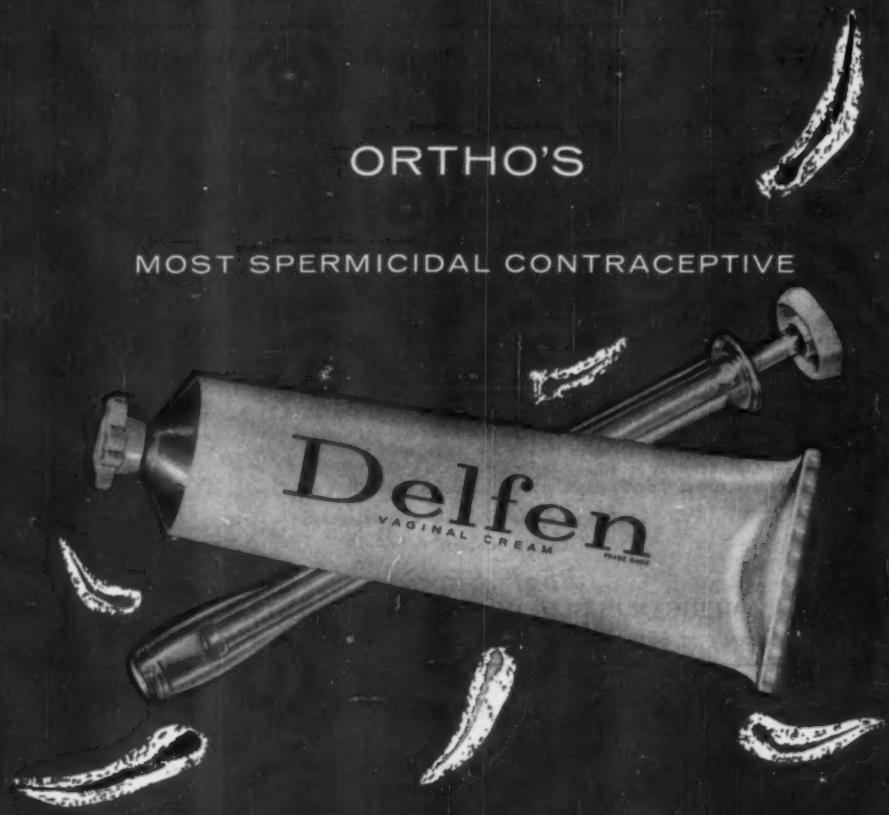

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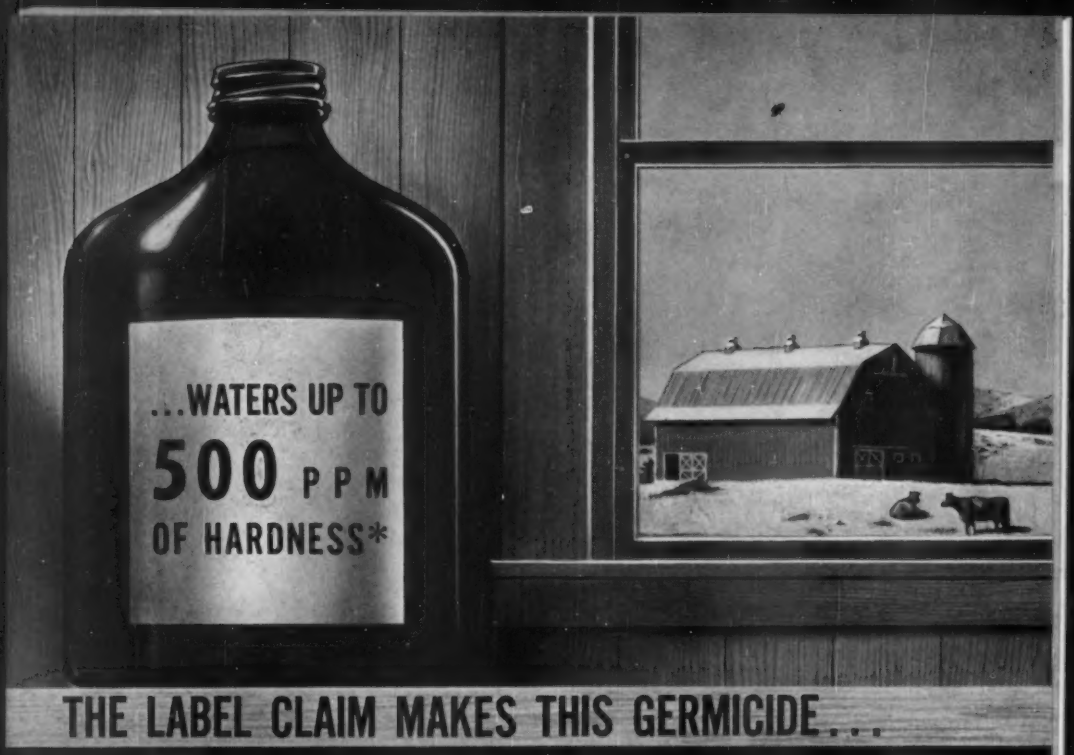

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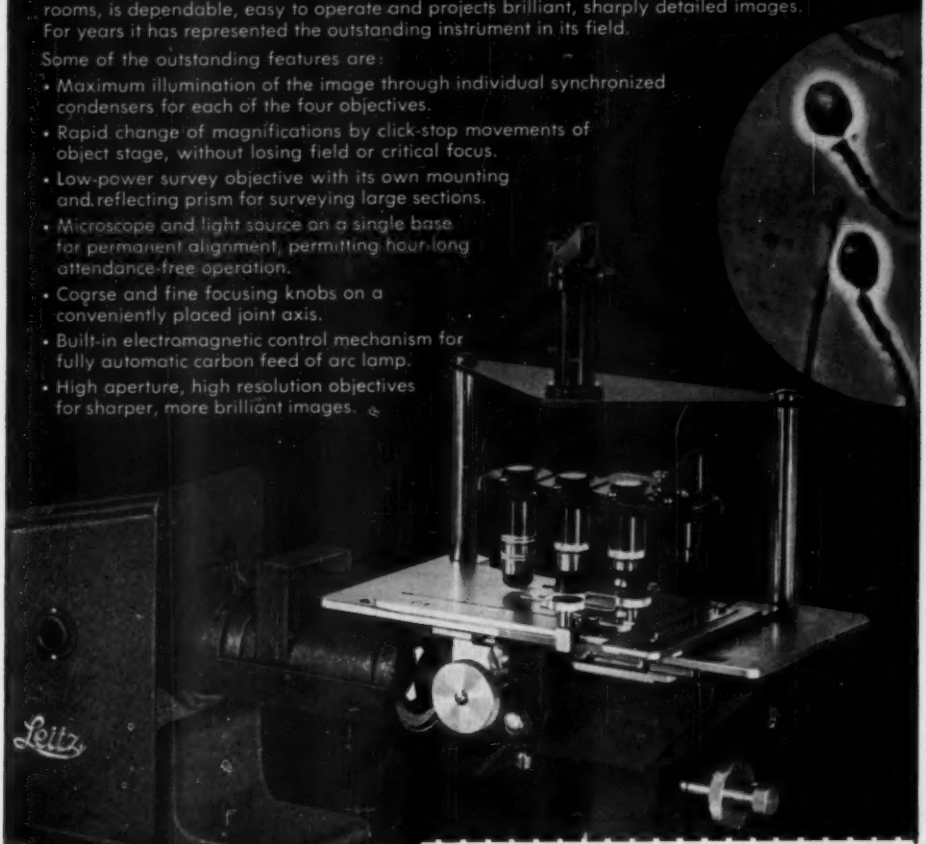

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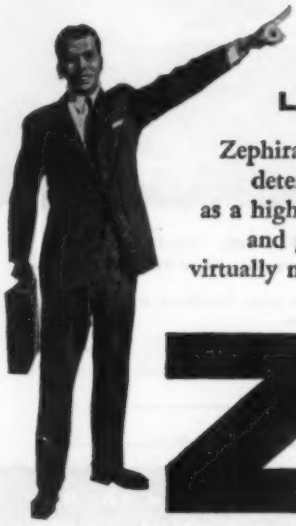

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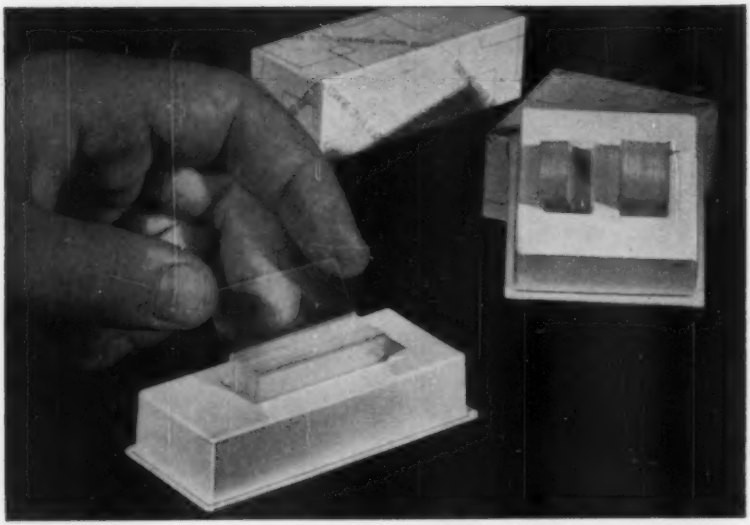

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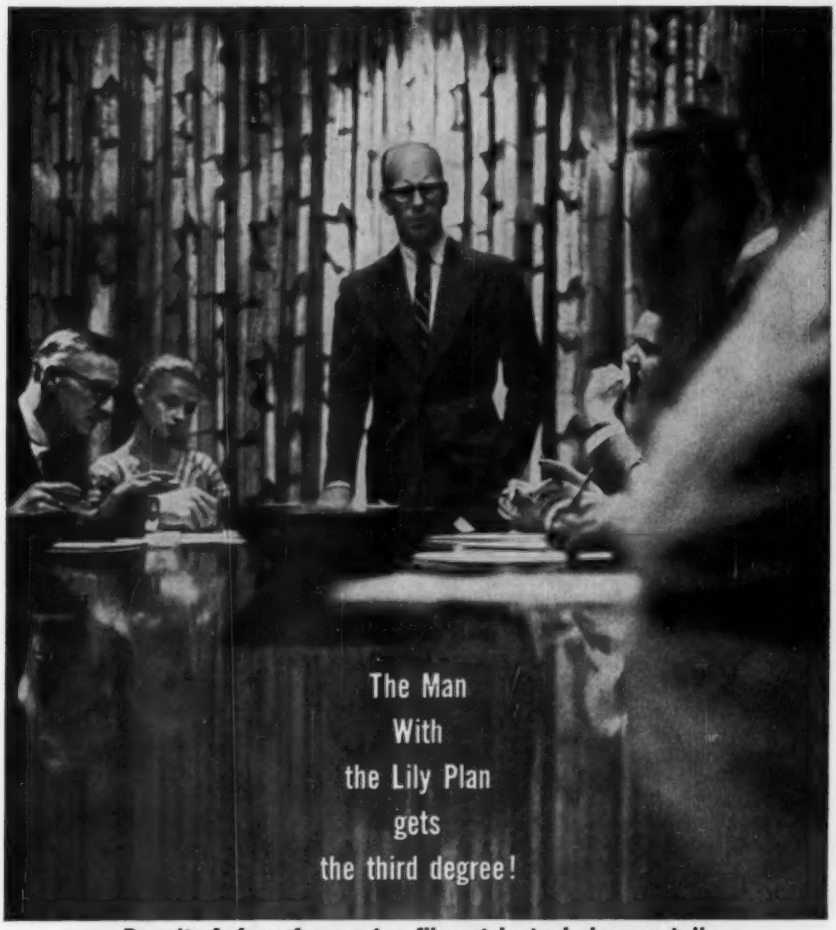

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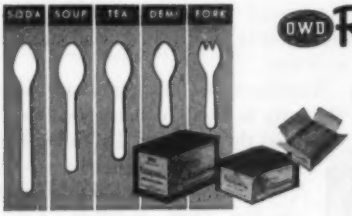

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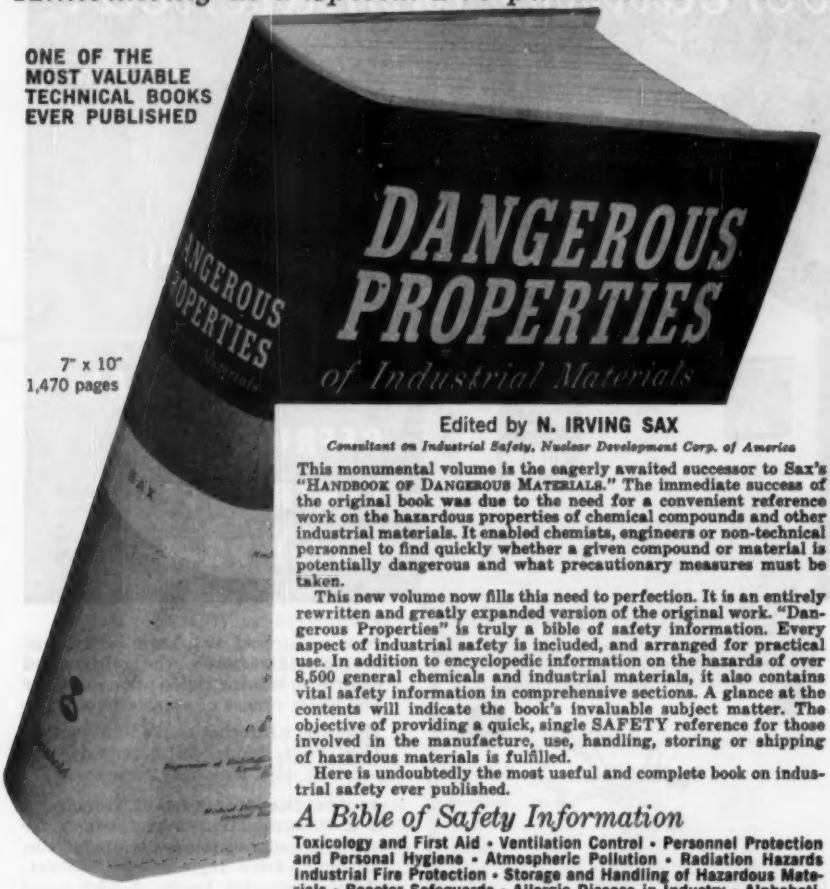

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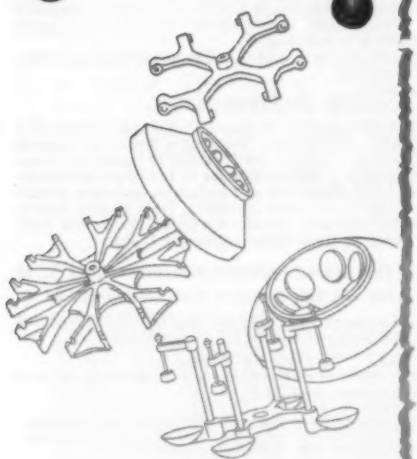

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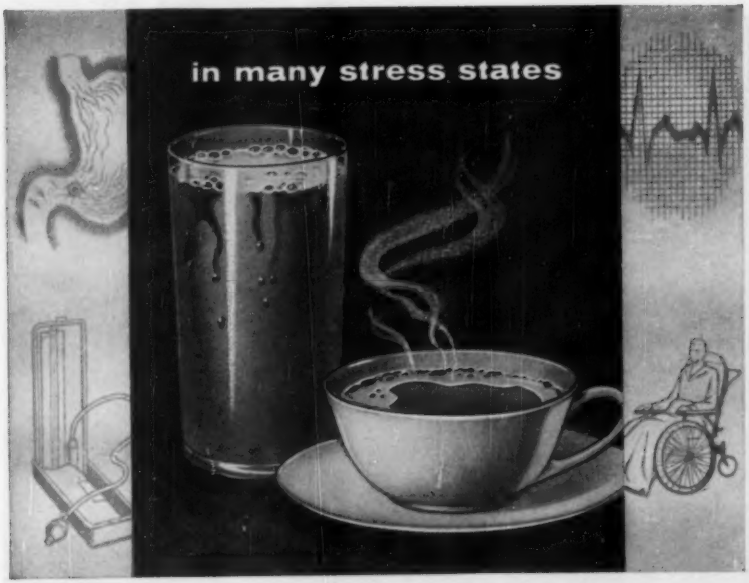

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Health Education in Transition

MAYHEW DERRYBERRY, Ph.D., F.A.P.H.A.

The Dorothy B. Nyswander Lecture Series was established to honor a pioneer of health education in the United States. In his remarks inaugurating the series Dr. Charles E. Smith, dean of the School of Public Health, University of California, pointed to the particular appropriateness of using this approach so as to prolong into the future the dynamic influence of Dorothy Nyswander. Recognized as a national and international leader in public health, she has put her stamp on health work by her basic studies in school health programs, more specifically the Astoria demonstration, and by training a host of students. For the first lecture, a "uniquely 'permissive' lecturer" was selected; appropriately enough he chose as his subject to analyze the moving tides in health education and to speculate on the distant shores to which we are moving. The implications of Dr. Derryberry's analysis are far-reaching indeed, and merit the serious consideration of all health workers.

To be invited to give the first Dorothy B. Nyswander lecture is a signal honor and one of which I am deeply appreciative. It is all the more pleasing to me because I count Dr. Nyswander as one of my close friends. I have chosen "Health Education in Transition" as the subject for this lecture, partly because so much change in health education has occurred since Dr. Nyswander first entered public health and partly because of the dynamic changes now in progress.

Many forces are importantly related to the process of health education—the health level of the people, the disease problems causing disability and death, the health resources available, the physical location of the people, the communication media, the economic and cultural resources, the kinds of action people must take to improve their health, and the facts known about behavior and its change. A review of the changes in these elements should help to focus today's health education efforts and may point toward possible future developments.

What were the conditions existing, roughly, a quarter of a century ago? When Dr. Nyswander began her pioneer work in public health how adequate was the information that could be given

Dr. Derryberry is chief, Public Health Education Services, Public Health Service, U. S. Department of Health, Education, and Welfare, Washington, D. C.

This paper was condensed from the Dorothy B. Nyswander Lecture, given on the eve of her retirement at the School of Public Health, University of California, Berkeley, May 21, 1957.

about the health problems of that time? What were some of the educational and sociologic situations that influenced the health education efforts? What was known about learning and behavior change that could be applied to health education tasks?

One-fourth of the deaths were from acute infectious diseases. Diphtheria, scarlet fever, pneumonia, septicemia, whooping cough, infant diarrhea and enteritis, tuberculosis, malaria, dysentery, and syphilis were the diseases that held the forefront of attention. They were the concern of both the professional health worker and the public. Why these diseases demanded so much attention and interest is quite understandable when one considers that in the early twenties the number of reported annual deaths for most of the more fatal infectious diseases exceeded the number of cases now reported annually. Actually, the average annual deaths from all infectious diseases for the three-year period 1924–1926 was 305,000; whereas for the period 1954–1956 the average was 82,000.[1]

The significance of these figures becomes all the more evident when it is recalled that the population in which they occurred was less than two-thirds of its present size, and also that reporting of vital events was much less complete then than it is today.

These were the problems toward which public health and health education were directing attention in the late twenties. To be sure, chronic diseases and other disabling conditions were among us, but by and large they were looked upon by the people as the natural result of growing old. It was the acute illnesses that aroused the people's concern. When disease struck, usually many members of the community were involved, onset was fairly sudden, and the end result was often tragic.

The widespread interest of people in avoiding the infectious diseases was a real asset to health education. People responded to education about the need for health departments and many were organized about that time. What is more, the departments were given unusual authority to enforce regulations and carry out sanitary measures to reduce communicable disease hazards. This community action may have somewhat obscured to workers of that day, and even of this, the motivational factors in the situation as I shall attempt to point out later.

But other elements in the situation at that time were not so favorable for effective education on how to avoid these diseases or reduce their impact, if one was stricken. There was not always clear, specific information that could be given on what to do. To be sure, vaccination against smallpox had been a preventive since 1798 (1800 in this country),[2] but this protective action often was not readily taken because the aftereffects of vaccination were frequently painful and disfiguring. Mass immunization against diphtheria became available in the early twenties, but for most other conditions no specific individual action could be advised, either to prevent the disease or to cure it.[3]

Such information and advice as was given was on general cleanliness—thought of as next to godliness—and rules of hygiene. The exact relation that taking baths and observing such other rules bore to specific disease prevention was not scientifically determined and hence was often impossible to explain to the public.

From the standpoint of education approximately 6 per cent of our population 10 years of age and over were illiterate, and the median number of school years completed was only about eight years.[4] Among groups with such limited educational experience it was difficult to interpret scientific findings of medicine into meaningful terms for behavior change.

Nearly one-half of the people lived in rural areas where opportunities for communicating information were infrequent.[5] Health workers had little chance to study the existing health ideas and practices of these rural folk as a basis for planning meaningful education.

Even where there was specific health information to communicate to the people, there was not the extensive mass communication network of today. Radios did not become available commercially until 1921 [6] and, of course, television was mentioned only in science fiction.

The average weekly earnings of all wage earners was under $27.00 per week.[7] The extremely low income of many people, which this average reflects, may not have reduced their concern about health, but in the struggle for the other necessities of living they often could not afford the health action that might have been indicated.

Individuals engaged in health education (there were a very few pioneering health educators) were not only hampered by a lack of scientific medical knowledge, by limitations in communication, and by educational and economic considerations, but were just as seriously hindered by the lack of understanding of how people—especially adults—learn and change their behavior.

Much research had been done by psychologists, sociologists, and anthropologists, and was being done at this time, but their findings had not yet been made available in forms which health workers found usable.

Much of the effort of the psychologists was being devoted to psychologic testing of intelligence and personality traits, together with statistical manipulations or interrelations, in the search for causal factors. In general, psychologists were not too interested in practical problems. Social psychology, as such, had not yet been accepted as an experimental social science. Group behavior was explained, using such vague concepts as "instinctive social forces," or "the mob spirit," or "the group mind." The public health worker found little practical advantage in understanding these concepts.

The sociologists' contributions were, primarily, systematic descriptions of society and the inner workings of the social components of a community. Health workers, in general, felt more at home with the methodology involved in such descriptions, for it more nearly approached the type of data collection and treatment they were accustomed to using in their epidemiologic investigations.

In so far as anthropology was concerned, it was just beginning to focus on modern culture. Much of the investigative effort up to this time had been spent in intensive field work, recording in detail the customs of the primitive peoples of the earth.

In general, social scientists had little to offer public health in the way of practical knowledge, primarily because they were not too interested in communicating what information they had uncovered. At the same time, public health workers were scarcely aware of social science as a rich source of help for their problems. Even had they been aware, the communication problem probably would have been a barrier.

Lacking systematic and scientifically established knowledge about ways of educating the public and of changing their habit patterns, health workers often borrowed methods from fields of endeavor whose goals seemed analogous to those of public health. The methods of the advertiser were borrowed and widely used as health education technics. For example, one health department developed the slogan, "Health Is Purchasable," as a means of getting appropriations. If these methods were questioned, they were justified by statements such as: "The businessman uses these advertising procedures

to sell his product. If they didn't pay in terms of more sales, you can be sure he wouldn't use them. Why shouldn't we use his methods to sell health?"

In an effort to interest school children the health message was sugar-coated. Health songs, poems, dramatizations, fairy stories, and the like were used extensively without any follow-up or measurement of their value.

Such was the situation when our honored guest first accepted a research position in a health agency. Now let us look at some of the developments that have taken place during the period of her service in public health. These are the changes to which she has been constantly adjusting to provide up-to-the minute leadership in health education.

First, in the medical and health area itself, the clinical and natural science laboratories, together with field experiments, have concentrated on determining the specific cause, as well as the most effective control agent, for each of the major infectious diseases. With such specifics as mass protection through sanitation, immunizing agents, sulfa drugs, penicillin and other antibiotics, most of the infectious diseases have been brought under control.

Second, means of communication have increased at an almost miraculous rate. It would be difficult to find a household without at least one radio.* In August of last year the Bureau of the Census reported that 76 per cent of our households had one or more television sets. The circulation of periodicals has almost doubled, and the distribution of newspapers has increased, though at a much slower rate. Thus, there are few people in the United States who are physically cut off from new information that might have value to them in improving their health.

* In 1950, 96 per cent of the dwelling units in the United States had at least one.

Third, discoveries in the field of atomic energy no longer astound us. We have come to expect them. However, one that may have real significance for health improvement was signalized early this year. A complete luncheon of appetizer, entree, vegetables, salad, and dessert—prepared from food that had been preserved over a considerable period of time by radiation—was served to a large public group in Washington. The guests were most enthusiastic about the natural flavor of the food. Consider what this can mean for nutrition and nutrition education, not only in this country, but all over the world.

Fourth, there are many other material developments in electronics, chemistry, physics, and the like, which have contributed to our way of living. They all make possible the realization of some of our goals, so that time and energy are available for other pursuits. They are considerations that will enter into health education planning now and in the future.

Fifth, many economic and sociologic changes have taken place. Practically all of our population can now read. The median years of school completed by persons 14 years and older is more than 10, and a fourth of our total population is in school. We are rapidly reaching the stage where most of the complexities of health problems can be communicated and understood by all of our people who have a desire to know and understand. The total national income of almost four hundred billion is the highest in the history of the country. In terms of individual income, the median for urban and rural nonfarm families surpasses $4,000 and farm income, though somewhat below 1952, has improved much in the last quarter century. This greater purchasing power makes vastly improved and increased health services a possibility. But we must be realistic, and recognize that other desires come into play when peo-

ple consider how to spend their income.

There is one other sociologic change which I should like to mention. Rural living is becoming less and less attractive. Earlier, half of our people lived in rural areas; now the proportion is barely a third and is constantly decreasing. At the same time there is a movement away from cities to the suburbs. The real sociologic and educational significance of this trend is only beginning to be investigated. There is some evidence that there is greater community spirit in suburbia than at the center of the city. At the same time there is competition between community loyalty to activities at the place of work and those at the place of living. Here is a problem that health education will need to study both for programs today and in the future.

While not as spectacular as the technologic applications of the physical and biologic research findings of the past 25 years, nor as apparent as the economic and sociologic changes just mentioned, progress in understanding the "how" and "why" of human behavior has been equally significant. Until World War II the psychologists, sociologists, and anthropologists, each with their own unique methodology, probed human behavior in terms of their own frame of reference. For example, the Freudians focused their investigations on the inner dynamics of the person. Others, like the behaviorists, concentrated their study on variables external to the individual. Still others of the Lewinian school stressed in their investigations such concepts as goals, objects, or activities sought by people. They studied extensively the decision-making process, particularly as it relates to actions a person or group will take voluntarily.

The Second World War created a new setting for social science study and investigation. It brought together researchers from the various groups or schools of thought, forced them to communicate with one another and to apply their theories and ideas to specific problems concerned with the war effort.

Out of the joint work on such problems as recruiting and selecting persons for specific war tasks, selling war bonds, reducing absenteeism, increasing production, and raising morale, a more general kind of orientation in the behavioral sciences emerged. As a result of the practical outcomes from these combined efforts, both government and industry made available large sums of money for theoretical and practical research on human behavioral problems. Yet, with all of the advances they have made, no unified theory of human behavior acceptable to all the scientists has been developed which health educators can apply to their work. However, some broad concepts are available for our use.

Behavior is now seen as the function of a great many variables—motivational, perceptual, social, and cultural. How an individual acts and thinks in specific situations seems to depend on inner drives arising from his personal goals and needs, his perception of the situation, and his past experiences, plus the influence of external factors of the situation, including the cultural patterns and social structures in the society to which he belongs. Common goals and experiences of people result in the observed similarities in the behavior of groups, while the individual's own peculiar experiences and motivations produce ways of acting, thinking, perceiving, and believing that are unique to him. This formulation emphasizes the need for health workers to obtain far more specific information about the goals, personality needs, perceptions, and value patterns of individuals as essential data for planning educational programs for health improvement.

It has been shown that people everywhere organize themselves in certain ways which divide them into different

cultural, class, or status groups, with a resultant limitation on full communication between groups. What better illustration of this concept and its operation do we need than the cultural and status differentials between doctors and laymen, and the problems in communication that result. Improving the communication between such groups, and especially doctors and the public, is a task that will demand much ingenuity on the part of health educators.

In the health work in other countries, as well as among some of the minority groups in this country, the importance of existing cultural patterns and concepts has been shown by social scientists. They have also analyzed the way in which cultural changes may be brought about or resisted, and how these have meaning to our health planning.

A complete catalogue of social science concepts useful to health educators is beyond the scope of this paper. Enough has been given, however, to suggest that the progress behavioral scientists have made over the years provides a rich storehouse for educators and practitioners in the public health field.

In addition to the scientific findings on behavior there is the development of new methods for uncovering meaningful information about individual and group behavior. Methods of sampling, interviewing, open-end questioning, projective technics, and other such procedures have been improved and developed. In health education we need to become acquainted with ways of adapting these research tools and making use of them in our day-to-day practical work.

One other encouraging development is the trend toward behavioral research in the content area of public health. The work of Paul, Simmons, Saunders, and Koos, as well as the work of Knutson and his staff in the United States Public Health Service, are merely the beginning of what will be a tremendous expansion of the theoretical and the practical research in this area.

In this rapidly changing social and technologic milieu what are some of the problems facing health education? The major specific health problems are those of chronic diseases, accidents, alcoholism, and mental illness. As we contemplate the job to be done in connection with these problems, I should like to emphasize some essential differences between them and the problems on which so much progress has been made in the past.

For many of the infectious diseases responsibility for control rested with the health authorities. The health department, through some measure such as water treatment or enforcement of sanitary regulations, provided protection for all the people, regardless of their own personal actions. Even where prevention depended on the people taking some action, it usually was a single act, such as immunization or vaccination, which was relatively inexpensive and not too inconvenient. Very often the action was taken on behalf of a child and not for the health of the individual who took the action.

But prevention or control of the conditions facing us today demands quite a different set of behavior patterns. Self-initiated action is required of the person whose health is involved. The indicated action may often lead to considerable expense, may be grossly inconvenient, and may require major revision of the individual's habit patterns.

For each of the diseases that have been "conquered," science discovered a single direct cause in a bacterium, virus, or other invading organism and provided a specific preventive or control measure. The direct cause-and-effect relationship between actions taken by the people and the results achieved were easy to demonstrate. If children are immunized for diphtheria, pertussis, and tetanus they do not develop the diseases. Penicillin quickly conquers streptococ-

cal infections and DDT demonstrably reduces the mosquito population. In such situations, education is relatively easy, for the effects of the advised action are readily apparent to the individual.

Over the years the success of scientists in finding the single cause for each of so many diseases and in developing a specific either for its prevention or control has led the public to expect a continuation of miraculous discoveries of fairly simple, easy-to-use remedies. Witness the rapid acceptance of the polio vaccine when it was released. It is doubtful that any other medical discovery has been accepted by the public with such alacrity. And this has taken place in spite of some of the unfavorable circumstances that arose. This public expectation of a single causation of disease entities and ready acceptance of new discoveries, particularly when they are simple and easy to take, is a real handicap to health education in today's problems.

So far as we know the chronic diseases and other health problems of today are caused by a multiplicity of physiologic, psychologic, and sociologic factors. It is not likely that a single causative organism or chemical will be found. Neither does it seem likely that a single preventive or control method will become available. Of course, I realize that tomorrow some laboratory may discover a formula for the Fountain of Youth which will out-date this information, but from the evidence now at hand we are forced to assume that such control as can be accomplished will probably depend on a series or combinations of actions, some, if not all, of which will demand changes in habits of a lifetime. Furthermore, even if the actions for prevention or control are effective, the cause-and-effect relationship is not likely to be so readily apparent to the people. When people expect a single causation for a given disease and a single action to bring about control, it will not be easy to stimulate a series of actions the effect of which cannot be easily demonstrated.

May I say, also, that this problem exists no less with the profession than with the public. It is difficult for the professional person also to identify clearly the role of education in dealing with problems that are ambiguous as to cause and complex in their solution.

This widespread expectation that a single disease has a single cause and a simple cure plays directly into the hands of quacks. Recently, Postmaster General Summerfield reported that "sure-cure" medical quackery by mail had "reached the highest level in history." During the past year ". . . postal inspectors have prepared cases representing an annual loss to the public of fifty million dollars." [8] To develop ways to combat quacks in their exploitation of this advantage is a challenge to us in health education. Many lives could be saved that are lost because of dependence on quacks.

The task of effecting an understanding of multiple causation is made even more difficult by the lack of scientific evidence and resultant lack of medical agreement on the combination of causes, the relative importance of each cause, and the combination of steps that one needs to take to avoid the conditions. Even in diabetes, where the disease process is better understood than in most chronic disorders, there are purists insisting on strict diet or chemical control; the free dieters prescribing symptom control; and the middle-of-the-roaders that combine chemical and symptom control.

In less well defined areas the differences in treatment are even more varied. Imagine the confusion of patients who may get conflicting advice on what to do about their illness from differing house officers or residents, even in the same teaching hospital. Recently, we have had a health educa-

tor working in the chronic disease ward of a general hospital. One of her important findings was the diversity of medical opinion on what kinds of adjustments—diet, work patterns, drug therapy—the same patient should make. What kinds of learning experiences can the educator create for constructive behavior-change, when the change needed is not well established? I recounted this dilemma to a leading medical educator. His answer, though scientific, in no way provided a solution for the problem. He said, "Well, the evidence shows that widely divergent methods seem to have approximately the same degree of effectiveness."

Until medical research has proof of causes of our present conditions and effectiveness of combinations of habit patterns in controlling or curing each condition, health education is going to be seriously hampered in making its potential contribution to the reduction of the disabling conditions occurring today.

In addition to the difficulties health education faces, with respect to the health problems and to the educational work that can be done, there are two other realities in our society that have a bearing on the future of health education. The first concerns the degree to which health operates as a motivating force in determining behavior.

Earlier, I indicated that the public's and the health worker's common concern about the acute infectious diseases might have obscured to the public health worker the importance of motivation in the public's behavior. We tended to assume that the interest of the public in health, as a goal in life, was equivalent to ours. We are now beginning to discover that health, per se, is not always the important goal that motivates people's actions.

Stouffer, in his study of the concerns of a cross-section sampling of Americans, showed that health, either their own or that of someone in the family, was mentioned by only 24 per cent of the people.[9] Rosenstock, in his pretest sample for a study on perceived needs of people, found a similar figure. He was able to identify one group that always mentioned health; this comprised the parents of small children. Their concern was not about their own health, but that of their offspring. Here is a health concern that has remained relatively constant over the years.[10]

But the large majority of the population have concerns other than health. Their present physical condition seemingly is no deterrent to the achievement of personal goals, such as professional, economic, social, or political success. Witness the long, strenuous hours put in by our physicians and the resultant high rate of heart disease in that occupational group. Certainly, no health adviser would prescribe the rigors of campaigning to which our politicians subject themselves, nor the all too frequent banquets which the successful ones must attend.

It may be disconcerting to us as health workers to accept the existence of this low level of concern about health. This is particularly so, since the social scientists have demonstrated that people do not act unless they are motivated, or otherwise see their action as satisfying some goal they have.

Another reality which health education must face is that many of the social problems of today require action on a broader front than the present operating definition of health embraces. Problems of the aged, juvenile delinquency, civil rights, slums—city and rural—unplanned suburbia, all have health aspects, but sometimes health plays a minor role.

Full solution of the problems requires the skills and talents of many professional groups and organizations working together. For example, meeting the problems of the older person demands the skills of individuals who can help

on income maintenance, recreation, vocational rehabilitation, education, housing, and health, to mention only the most obvious ones.

These last two facts, namely, that the primary concern of many people is with goals other than health and that the scope of social problems in communities embraces many more facets than health pose real difficulties for health education in the future.

Are we, as health educators, going to manipulate the people, or otherwise pressure them into doing something about health and neglect the other aspects of the broad problems confronting them? Are we going to work with them to achieve some aspects of their goal, so that they will reward us by working on the health problems of our concern? Or are we going to help people, individuals and groups, to achieve the constructive goals they have regardless of their relation to health? And if we do concentrate our effort outside the health area, how is our health administrator going to perceive us, even though our efforts may contribute ultimately to long-term health improvement? These questions pose a real dilemma for us in health education.

Surely, there are a number of ways in which the problem can be met. One possible direction might be the broadening of the health educator's role so that he might be able to help individuals and communities cope with the problems of their concern. In such a role he would do the same things that good health educators do, except that the content area in which he works would not be limited to health. Specifically, the task would be to assist people to obtain the best technical resources available and also help them to comprehend the "pros" and "cons" of the alternative actions they might take. Once they reach a decision he would help in planning the step-by-step action they need to take in order to reach their goal. To be effective he would need to know the sources of technical competence on a wide range of problems, but not necessarily be the source of information himself.

Actually, what is being suggested is a type of professional community worker who will do for human betterment everywhere what the county agent or extension worker has started to do for the betterment of farmers in selected demonstration areas. The type of work may be signified by some such title as, "Extension Worker for Conservation of Human Resources." Of course this title is much too long, but it suggests the breadth of educational responsibility involved. Think of the rapid, practical translation of scientific findings into improved human living, if in every community of this country there were available a community worker who was effective in giving such educational service.

Perhaps some of you are thinking, "What would this mean for health education and health educators?" Would it not mean broadened scope of activities, greater freedom to work in all phases of human improvement and opportunity to utilize to the maximum the findings of the behavioral sciences concerning individual and group behavior change? Ultimately, we might be joining hands with agricultural extension workers, rural development workers, and adult educators, each of whom would likewise broaden his scope and horizons as well as become more qualified in the fields in which he is not now working. To our background in social science, education, and knowledge of health resources we would add information about the technical resources in all the other fields. But this would not be such a difficult task.

There are many unanswered questions about this concept. To whom should the worker report? How would the community worker keep up on all

new developments? Who should pay for such a person? Would health, recreation, housing, rehabilitation, and other social program administrators be willing to permit communities to decide the problem on which they would work if the vested interests of the social agencies were not served?

These are only some of the many valid questions that need to be answered concerning this one proposal. Doubtless there are other suggestions for the kinds of constructive change which health education should be making to fit into the realities of today's society. As a young profession, we should be constantly seeking effective ways to improve human living and make it more satisfying. In so doing we shall need to be constantly alert to the problems of concern to the people and to utilize all that is known about the way people react, think, and work. If the new ways of working encounter administrative and organizational barriers, we should seek satisfactory ways of overcoming them. After all, administration and organization are creatures of our own development. They, too, are subject to change.

In honoring our guest tonight, we have reminded her of the vast changes she has experienced since she first started contributing to public health. To many of these changes she has made tremendous contributions. One last one, unmentioned until now, is the development of a professional corps of health educators. Her students, and the work they are doing, attest to the extensive contribution she has made to this development. As we in health education now look to the future and the possible expansion of the scope of problems on which we can work, I feel certain that we will accept the challenge and pioneer as Dr. Nyswander has done always thinking ahead, testing, revising, improving, and contributing to make the lives of all of those with whom we work much more satisfying.

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Postdoctoral Study in Statistics

Persons whose primary field is one of the physical, biological, or social sciences to which statistics can be applied rather than in statistics as such, are invited to apply for an award for study in statistics being offered by the Department of Statistics of the University of Chicago. The awards, for postdoctoral students, range from $3,600 to $5,000 on the basis of an 11-month residence. They are made possible by a grant to the university from the Rockefeller Foundation. February 15, 1958, is the closing date for application for the academic year 1958–1959. Further information from the Department of Statistics, Eckhart Hall, University of Chicago, Chicago 37, Ill.

Role of Dietary Fat in Human Nutrition

I—Role of Unsaturated Dietary Fat in Infant Nutrition

ARILD E. HANSEN, M.D., Ph.D.

The role of fat in human nutrition has received a great deal of attention in the last few years. It has been the subject of considerable investigation and controversy, particularly in relation to the development of atherosclerosis and the causation of ischemic heart disease. For this very reason, it is important to have an authoritative overview of the current status of the fat problem. Dr. Hansen's paper is the first of a series devoted to this area of investigation. It appears that certain fatty acids, particularly linoleic acid are essential in infant nutrition, and it is suggested that these nutritional constituents may play a more important part in adult nutrition than has hitherto been realized.

In contrast to statements made by some speakers during this symposium, pointing to a "recent" interest in the essential fatty acids, our laboratory and clinic has for many years devoted considerable attention to the subject in an attempt to learn the meaning of a rather unique phase of nutrition. The reason for this prolonged concern has been our belief that linoleic acid plays some basic metabolic role in human subjects. Furthermore, it was felt that to better understand human nutrition, particularly as it concerns the infant, detailed consideration must be given to these fatty components of the diet.*

During my early years in practice it was commonly accepted procedure to remove fat from the diet of infants suffering from eczema. This dietary change seemed to be of little help and the challenge of the opposite approach, namely, to add fat to the diet, seemed sufficiently inviting to try it as an adjunctive measure for the treatment of infants with intractable eczema. The clinical impression was obtained that a number of infants so treated were benefited. Several such experiences led to a study of the blood fats of infants.

Early studies revealed that infants with chronic eczema tended to have iodine numbers of the serum fatty acids which were in a lower range than those of control infants having no abnormality of the skin. In the initial studies the mean value of the iodine number of the serum fatty acids in patients with eczema was 84 compared with 112 for control subjects. Although many patients with chronic dermatitis were given fat supplements, such as fresh lard, raw linseed oil and corn oil, and often with rather striking effectiveness clinically, it was soon realized that a dietary supplement of fat rich in the essential fatty acids was not a panacea for all that is called "eczema." By the same token, the conviction became firm that one of the factors concerned with maintenance of the integrity of the skin might well be

* Lest one err by not acknowledging the inestimable aid of one's associates I wish it understood that without the assistance and stimulation of a number of collaborators my contributions would have been inconsequential. At this time, I wish to mention some of these: Hilda F. Wiese, William Redman Brown, George O. Burr, Irvine McQuarrie, William R. Wilson, and Doris J. D. Adam.

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the essential fatty acids, particularly linoleic acid. The discovery of Burr and Burr concerning the essential nature of certain unsaturated fatty acids was of distinct significance in nurturing our clinical conviction. Although early studies with George O. Burr had disclosed that the blood serum of fat deficient rats absorbed less iodine and the iodine numbers of the fatty acids were lower than those of healthy control animals, it was not possible to determine whether the differences in iodine number were due to lesser amounts of unsaturated fatty acids or to greater amounts of unsaturated fatty acids in the blood serum. Hence, it seemed axiomatic that in order to learn something definitive in relation to the essential fatty acids regarding human nutrition, it was necessary to have a method of measurement for specific unsaturated fatty acids in blood.

Two features seem to stand out which have been helpful toward reaching a means of measuring the unsaturated fatty acids in the blood and body tissues. In collaboration with William R. Wilson a semimicrogravimetic technic was developed by which the fatty acids were separated from the nonsaponifiable fraction of the lipid extract. One was able, then, not only to measure the amount of fatty acids in the blood serum, but also to determine their average molecular weight and average iodine number. It was felt that with more definitive data thus available concerning the fatty acids, it was no longer necessary to make adjustments as had been required by the currently employed oxidative and titrimetric methods of determination. Next, the rather arduous task was undertaken to identify specific unsaturated fatty acids in the serum. To pursue this idea it was decided to study dogs. Young puppies were maintained on diets very low in fat content, whereas control animals were given the same diet except for various kinds and amounts of fat. The dogs proved to be very valuable for study not only because it was possible periodically to obtain for analysis specimens of blood serum and body tissues, but particularly because young puppies were found to develop dramatic evidences of fat deficiency. After considerable and sustained efforts in collaboration with my colleague, Hilda F. Wiese, it was possible to develop a spectrographic method for determination of the two, three, and four double-bond fatty acids in blood serum and tissues. The results were found to correlate well with the dietary history of the animals as well as their clinical condition. Because the method proved so satisfactory, we felt justified in pursuing the task of measuring various unsaturated fatty acids in the serum of human subjects.

Rather early in the study of the essential fatty acids it was found that the magnitude of the requirement for specific fatty acids was not in the same category as were the requirements for various vitamins, yet, obviously it was not in the same range as for water, proteins, carbohydrates, and fat per se. At the same time it seems that the slow acceptance of the discovery of the essential nature of dietary fat has been due in part, at least, to the relatively small amount of specific fatty acids required to prevent evidence of fat deficiency. It must be emphasized that it was not until diets extremely low in fat were used that the role played by certain fatty acids in experimental animals became a matter to be reckoned with nutritionally.

For some reason or other during the past century, relatively few attempts were made to study in man the effects of diets very low in fat. The first study undertaken to correlate dietary intake of fat with the serum lipid findings was made on infants in whom the use of relatively low fat diets was a necessary part of their therapeutic regimen. The degree of unsaturation of the fatty acids

of the serum was found to be lower than when ordinary diets were used. The first long-term study attempting to elucidate the significance of fat in the diet was made when William R. Brown, a collaborator of Burr, volunteered to maintain himself on a diet similar in composition to that given the experimental animals that developed evidences of fat deficiency. He remained on this regimen for six months; during this time he was my house guest and my wife did her best to make the stringent diet as palatable as possible. At times, mineral oil (with cellulose and sugar) was used in baking "biscuits" and "cookies" but diarrhea invariably developed so that only small amounts of mineral oil could be used as a substitute for shortening. Although the methods for determining linoleic and arachidonic acid as the tetra- and octabromides were rather unsatisfactory, the results indicated a decrease in values in keeping with a definite lowering of the iodine number of the fatty acids of the serum. The subject lost weight despite what was considered an adequate caloric intake for him, and his nonprotein respiratory quotient increased to well over 1.00. On the basis of the findings in this study the conclusion was drawn that the human being apparently did not synthesize essential fatty acids, although it was evident that more refined technics were necessary for convincing proof. Our next extensive experience with the use of a low-fat diet was in an infant with chylous ascites where it was deemed wise therapeutically to employ a skimmed milk diet. The infant was kept on this regimen until 23 months old, although after six months of age solid foods low in fat were added to the skimmed milk diet. Progress was quite satisfactory, but it was noted that the infant's food consumption was great. At times eczematous patches developed on the body. It was also found difficult to clear the skin after impetigo had developed on one occasion, and a chronic dermatitis following prickly heat on another. The iodine number of the fatty acids was very low.

After the development of the semimicrospectrographic method of Wiese and Hansen, the results of which were found to correlate well with the dietary history of the dogs, their general condition, as well as the histologic alterations in the skin, we felt justified in attempting to ascertain some idea of the magnitude of the human requirement for essential fatty acids by correlating the blood serum values for the two, three, and four double-bond fatty acids with the dietary intake of fat, especially in relation to the amount of linoleic acid present. Some 20 infants were fed on milk mixtures containing various amounts and kinds of fat. These studies have not been completed; hence, the data are not available. However, from preliminary observations, it appears that the blood serum levels for two, three, and four double-bond fatty acids reflect to a remarkable degree the dietary intake of linoleic acid. In addition, food consumption on the unit body weight basis appears to be affected by the kind and amount of fat in the diet. This finding is not out of line with observations made with experimental animals.

In order to attempt to ascertain the nutritional significance of these fatty acids from the general pediatric or the public health viewpoints, our present studies deal with clinical and chemical changes found in infants fed on different milk mixtures varying in fat and linoleic acid content as are present in the milk preparations used in everyday infant feeding. We trust that the results will lead to a better understanding of infant nutrition from the clinical viewpoint and ultimately thereby contribute to a clearer view of the dietary and metabolic role of linoleic acid. It is, perhaps, no accident that the natural food of babies contains some three to

four times more linoleic acid than is present in the usual cow's milk mixtures used in infant feeding. Arteriosclerosis is not a problem in the childhood age, but one may conjecture that an adequate dietary intake of linoleic may have influences which do not become of significance until years later. Character is molded during infancy and childhood, and it may be that early dietary habits influence the vascular integrity of man. Such a possibility can be established only by long and well controlled studies. We trust that the recent upsurge in interest in the essential fatty acids in relation to human nutrition and metabolism will accelerate the necessary endeavors to bring the field of the essential fatty acids into its proper perspective.

II—Role of Unsaturated Fat in Adult Nutrition

J. M. R. BEVERIDGE, Ph.D., M.D.

There is no doubt that lipids have a significant effect on the nutrition and well-being of the human organism. Nonetheless, the final answers are yet to be made. In this second paper of the series on the role of dietary fat in adult human nutrition, the author reviews our knowledge in this field delineating what is known, as well as the problems that still require adequate investigation. Special emphasis is given to the unsaturated fatty acids.

Authoritative information on the role of fat in human nutrition is extremely meager. There are, of course, very good reasons for this since both practical and humane considerations militate against any long-term study on the effect of fat-free diets in human beings. Despite the paucity of knowledge in this field, I have resisted the temptation to review and present the relatively voluminous experimental work on the lower mammals and to make hazardous and possibly untenable extension of these findings to man.

Perhaps it should be made clear straightaway that the term fat is used here to mean not only triglycerides, but also to include those substances usually associated with triglycerides in the discrete natural fats as they are sold. This interpretation justifies a reference to plant and animal sterols and to other compounds present in the unsaponifiable matter. This point is made since at the present time the nutritional effects of these various components have yet to be unequivocally determined.

There are a number of obvious roles for fat in nutrition, but I shall make only a passing reference to a number of these. The improvement of palatability of diets by the presence of fat is well known, but this practical and important facet of fat nutrition need not concern us at this time. The satiety value of fat and its function in supplying calories may similarly be passed over.

Reference has been made in the literature to a greater protein-sparing action of fat compared with equicaloric amounts of carbohydrate.[1] Although this finding appears to be proved for experimental animals,[2] further work would be required to establish this point in human beings. The thesis that the essential fatty acids, linoleic, linolenic and arachidonic, play a role in the optimal nutrition of infants as described for them by Hansen and colleagues has recently received further support from experiments by these workers (cf. preceding article). However, the signs and symptoms of a deficiency of essential

fatty acids have yet to be produced experimentally in the adult human being. W. R. Brown,[3] in a study carried out in collaboration with Hansen, Burr, and McQuarrie, subsisted on a diet essentially free from fat for a period of six months but no clinical signs of deficiency appeared. Indeed the diet, according to the published report, appeared to be of benefit to him. The main finding of note was a relatively large decrease in blood levels of plasma linoleic and arachidonic acids. Although a requirement for these fatty acids has yet to be established for adult human beings, it is probable that they are in fact dietary essentials.

In 1952 Waldron, Beidelman, and Duncan[4] made the extremely interesting observation that meals high in fat caused a decrease in the coagulation time of blood during the period of alimentary hyperlipemia. Although criticisms[5] have been directed at the technic of these workers, other investigators have confirmed their findings.[6-9] Still other groups have failed to obtain this effect.[4, 10, 11] Further studies are required to resolve these apparently contradictory findings.

Another important aspect of fat metabolism that has received much attention during the last few years has been the effect of high dietary fat levels in causing an elevation of plasma lipids. The implications of this finding are obviously of great significance. It would appear to me to be redundant to discuss at length before such a group as this the thesis that increased plasma lipid levels may be an important contributing factor to the development of atherosclerosis. The fact that there is an association between high plasma lipid levels and a high incidence of atherosclerosis is fully substantiated. Many studies[12] have been published demonstrating that groups of individuals with overt or proved atherosclerosis display, on the average, higher plasma lipid levels than do others of the same age and sex who do not show any obvious signs of the disease. Since the so-called control groups undoubtedly had a significant degree of atherosclerosis that might be termed occult or hidden, it is indeed remarkable that this relationship was ever discovered. The important question that must be answered is whether or not the relationship between the disturbances in plasma lipid levels and atherosclerosis is one of cause and effect. The evidence bearing on this problem has been derived from work on experimental animals, and from epidemiologic, clinical, and pathologic studies on man, topics that are to be developed in forthcoming articles. It will be sufficient to state here that it seems justifiable and indeed advisable to regard high plasma lipid concentrations as a factor that potentiates the development of atherosclerosis in human beings. It follows therefore that information on the control, dietary or otherwise, of the levels of these plasma components may be of great importance.

Of all the factors that control the concentration of cholesterol in the blood —hormonal imbalance, sex, coagulation factors, caloric balance, and diet—the latter is undoubtedly the most important because it has such a potent determining effect and, furthermore, the diet is something that can be readily modified. The investigations on this role of dietary lipid cannot be reviewed in full due to lack of space. As an introduction to some of our studies,* using large groups

* These studies were performed in collaboration with Drs. W. F. Connell, G. A. Mayer, J. B. Firstbrook, and Miss M. DeWolfe.

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of normal subjects, only a few pertinent references to work published prior to 1954 will be made. Publications subsequent to this time will be mentioned at appropriate stages in relation to some of our experimental results.

The central or prime role of dietary cholesterol in the production of greatly increased plasma lipid levels and the development of atherosclerosis in experimental animals, first demonstrated early in this century by Anitschkow,[13] led naturally to the assumption that dietary cholesterol produced a similar sequence of events in the human species. However, efforts to show that this dietary component played this role in man have so far met with little success. The work of Keys and his colleagues [14, 15] and Hildreth, et al.,[16] focused attention on the role played by high levels of dietary fat in causing an increase in blood lipids. The source and nature of the fat, whether of animal or vegetable origin, according to these workers, had no influence. Kinsell and his co-workers,[17] however, who administered fat emulsions via a stomach tube to various hospital patients undergoing different treatments, some of which were well known to affect plasma lipid levels, reported that preparations of certain vegetable oils not only did not lead to increased plasma cholesterol levels but actually effected a decrease.

The report of Groen and his colleagues [18] in Holland confirmed the finding of Keys [14] and Hildreth [16] on the effect of animal fat, but they found that a diet almost entirely vegetarian in character led to lower plasma lipid levels than did a diet high in foods of animal origin and high in animal fat. The work by Hardinge and Stare [19] on the serum cholesterol of groups of non-vegetarians, lacto-ovo-vegetarians, and true vegetarians also served to support the view that there did in fact exist a marked difference between animal fat and vegetable fat, since the last-named group displayed significantly lower plasma cholesterol levels than the other two groups. Still other workers, for example Wilkinson, Blecha, and Reimer [20] found no demonstrable relationship between any dietary component and the level of total serum cholesterol.

A valid interpretation of these apparently conflicting conclusions reached by competent workers was made difficult due to a number of circumstances. For example, the complete details of the rations used were not given and dietary modifications in most cases were made by adjustments to a ration comprised of the usual variety of foodstuffs containing different types of carbohydrates, proteins, and fats, any one of which might conceivably have had a significant effect on the process under study. Furthermore, there are tremendous difficulties inherent in any dietary experiment in which fairly precise control of the proportions of fat, protein, and carbohydrate is attempted by modifying a diet comprised of the usual variety of foodstuffs. Variability in the composition of cuts of meat and other foods combined with individual food preferences make this type of control exceedingly difficult, indeed almost impossible to achieve. A circumstance that was largely responsible in leading us to adopt this stand was our experience in performing certain dietary experiments with a regimen approximating that employed by Hildreth, et al.,[16] and which led to the same conclusions reported by these workers.[21] It was decided that definitive data could not be obtained unless better controlled experiments could be carried out.

For the reasons just outlined an attempt was made about three years ago to devise palatable homogeneous diets comprised of a relatively few components of definitely known composition which could be accurately made up and dispensed. This regimen permitted excellent control over caloric intake and

complete control over the proportion of calories derived from the main components of the diet and also regulated the mineral and vitamin intake. Unknown to us Ahrens and his co-workers at the Rockefeller Institute about the same time had arrived at a similar conclusion and solution.[22]

The initial experiments utilizing this regimen were performed with the cooperation of five male faculty members and extended over a period of about five months.[23, 24] Space does not permit the presentation of the details of this work and it must suffice to say, first, that under the conditions used by us dietary cholesterol had no effect on the concentration of plasma cholesterol, and second, that the incorporation of corn oil into the diet led to significantly lower plasma lipid levels than when equicaloric amounts of butter fat were in the ration.

Broadly speaking the difference in response to the ingestion of these two types of fat might be due to: (1) a positive action of butter fat in raising plasma lipid levels, (2) a positive action of corn oil in depressing plasma lipid levels, or (3) a combination of these two possibilities.

Subsequent experiments using large numbers of male volunteer subjects were performed in order to extend this work and to gain information on the possibilities outlined.[25-27]

The first feeding trial was designed to assess the effect of several types of animal fat on plasma cholesterol levels. The basal diet was comprised of skim milk powder, a type of fat, a vitamin supplement, and celluflour and provided 16.9, 58.5, and 24.6 per cent of calories as protein, fat, and carbohydrate, respectively. In this and subsequent experiments the ingredients were homogenized with water by means of a Waring blender or a large Logeman homogenizer, transferred in 950 calorie portions to cardboard cartons, and stored in a freezer until required. Prior to consumption the product was thawed, and according to individual preference, cold or hot water added to make a drink of fair palatability. The only other items permitted were water, clear tea, and clear coffee.

The subjects were asked to regulate their intake of the ration in order to keep body weight constant within fairly narrow limits. Only a few individuals gained or lost more than two or three pounds during the experimental period and the great majority were highly successful in maintaining their weight constant. Blood samples were taken prior to breakfast from 7:30 to 8:30 A.M. and total cholesterol determined in the plasma by means of a modification of the Schoenheimer-Sperry procedure.

During an initial period of eight days the basal diet supplying 58.5 per cent of calories in the form of corn oil was ingested by a group of 37 subjects. The plasma cholesterol decreased an average of 32 per cent, a highly significant change, the P value being less than 0.01. Those continuing on corn oil displayed a further insignificant decrease. The other groups, transferred to diets in which the corn oil had been substituted by equicaloric amounts of the fats of animal origin showed increases of differing magnitude. In Figure 1 these increases are expressed as percentage changes from the concentrations noted at day eight. In the case of beef dripping the increase was 11.7 per cent, for chicken fat 12.7 per cent, lard 15.4 per cent, and butter fat 28.8 per cent. Only the increases noted on the butter fat and lard diets could be shown to be significant, the probability in both cases being less than 0.01. Ahrens and his colleagues [34] have reported similar findings for the response of three normocholesterolemic subjects and four hypercholesterolemic patients following the ingestion of diets containing corn oil or lard.

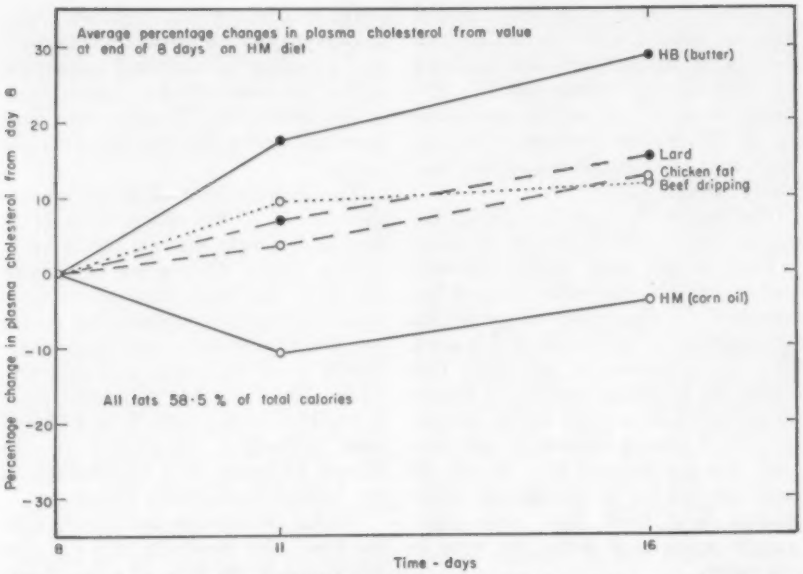

Figure 1—Averages of the Individual Percentage Changes in Plasma Cholesterol Noted Between Day Eight and 16 for Groups of Young Male Subjects Following an Initial Period of Eight Days on a Diet Providing 58.5 Per cent of Calories in the Form of Corn Oil and Placement on Diets Containing Equicalorie Amounts of the Animal Fats Indicated on the Graph

These results confirmed and extended our previous findings on the difference in effect of corn oil and animal fats on plasma cholesterol levels. The next question to be answered was whether the effect of a diet containing corn oil in causing a decrease in plasma cholesterol level was due simply to the fact that animal fat had been eliminated from the diet or was due to the presence of some factor in the corn oil that acted to lower the concentration of this blood component. The next experiment was carried out to clarify this point.

During a period of eight days 49 subjects consumed a fat-free diet the composition of which is shown in Table 1. Plasma cholesterol decreased an average of 22.2 per cent ($P =< 0.01$). Those continuing on the fat-free diet showed little further change (cf. Figure 2). The groups ingesting 20 and 60 per cent of calories as butter fat showed increases of 6.6 and 21.7 per cent, respectively. The latter change is highly significant, the P value again being less than 0.01. By contrast those receiving diets providing 20 and 60 per cent of calories as corn oil showed further decreases of 6.9 and 15.2 per cent, respectively. Again, only the latter change is highly significant.

There are a number of points in this experiment that should be emphasized. The highly significant decrease of 15.2 per cent between the eighth day on the fat-free diet and the eighth day on the ration high in corn oil attests to the presence of a factor in this fat that actively lowers plasma cholesterol levels. As additional evidence for this assumption it should be noted that the average

Table 1—Composition of Basal Fat-Free Diet,* Amounts Required to Make a 950 Calorie Sample

Ingredient	Amount (gm)	Protein (gm)	Fat (gm)	CHO (gm)
Lesofac †	60	30	0.6	23.5
Starlac	28.1	10	0.1	14.6
Dextrimaltose	143.5	...	...	140.7
Sucrose	17.1	...	...	17.1
Total	...	40.0	0.7	195.9
Calories	949.9	160.0	6.3	783.6
Per cent calories	...	16.9	0.7	82.4

* A supplement of vitamins was supplied in the form of Vitules (Wyeth). Roughage was supplied by the addition of about 4 gm of cellufour per 950 calorie batch. Both cellufour and vitamins were mixed in with the other ingredients.

† A protein preparation derived from milk.

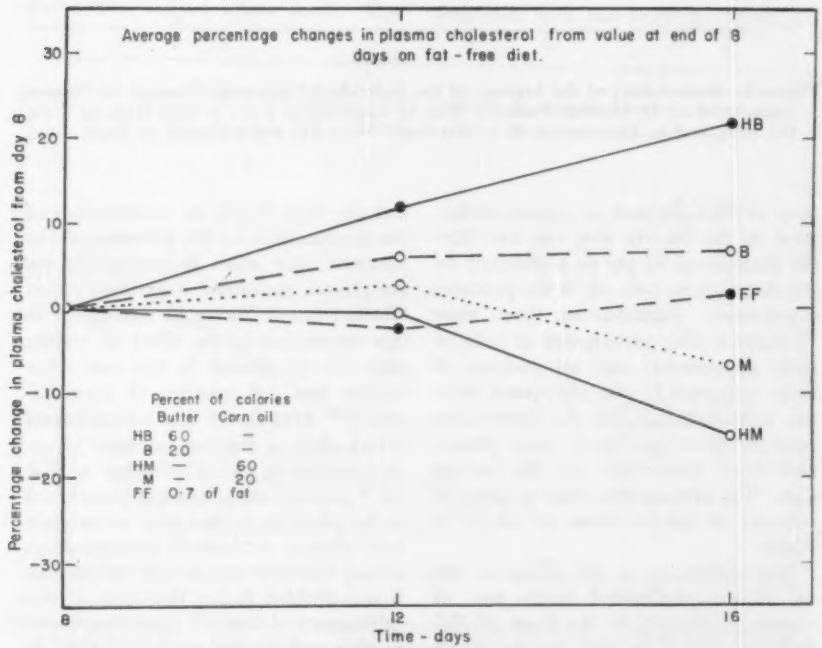

Figure 2—Averages of the Individual Percentage Changes in Plasma Cholesterol Noted Between Day Eight and 16 for Groups of Medical Students Following an Initial Period of Eight Days on a Fat-Free Diet and Placement on Diets Varying in Respect to the Nature and Level of the Fat Moiety as Indicated in the Lower Left-Hand Corner of the Graph

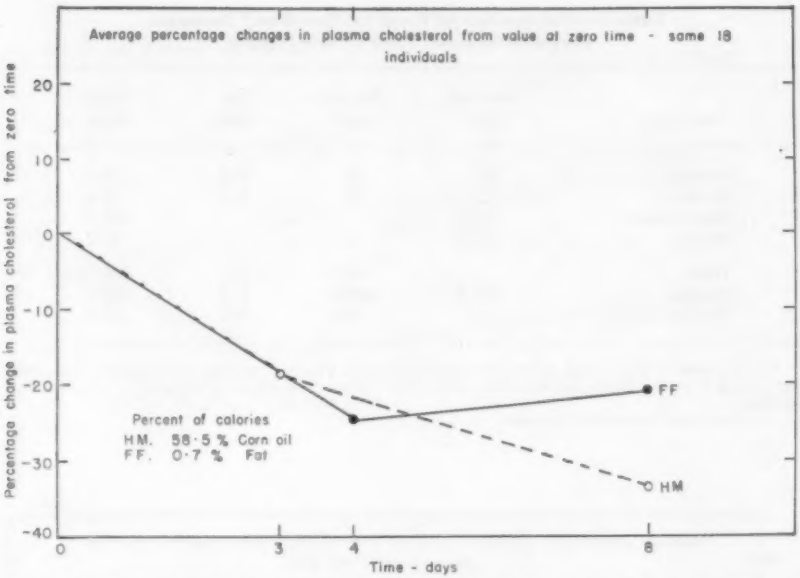

Figure 3—Comparison of the Average of the Individual Percentage Changes in Plasma Cholesterol in 18 Medical Students Who in Experiment I Ate a Diet High in Corn Oil, HM, and in Experiment II a "Fat-Free" Diet, FF, for a Period of Eight Days

drop of 22.2 per cent in plasma cholesterol on the fat-free diet was less than the decrease of 32 per cent observed on the diet high in corn oil in the previous experiment. Furthermore, there were 18 subjects who participated in both of these experiments and an analysis of their responses by the chi-square technic indicated that the diet containing corn oil led to significantly lower plasma cholesterol levels than did the fat-free diet. The average responses of these 18 subjects on the two diets are shown in Figure 3.

The differences in the effects of fats on plasma cholesterol levels are, of course, explicable on the basis of differences either in the unsaponifiable fraction or in the nature of the fatty acid residues of these fats. Kinsell, et al.,[28] and Bronte–Stewart and colleagues[29] have claimed on the basis of their work that the high degree of unsaturation of the triglycerides or the presence of the essential fatty acids is responsible for the plasma cholesterol depressant effect. Another possibility to be considered in this connection is the effect of certain plant sterols present in this and other similar fats. A number of investigators[30, 31] have shown that beta-sitosterol brings about a decrease in some hypercholesterolemic individuals, but as Pollak[32] pointed out it has not been found to be effective in the case of subjects with plasma cholesterol concentrations of less than 200 mg per 100 ml plasma. It was decided to test the effect of this substance and that of alpha-tocopherol, another well known compound that occurs in significant amounts in the unsaponifiable matter of corn oil.

Fifty-two healthy young male subjects ingested for eight days a diet similar

to that used in the previous experiment, except that butter fat provided 60 per cent of calories, the dextri-maltose being omitted. The subjects were then divided into five groups, four of which were placed on modified diets for another eight-day period. The supplements were 10 mg alpha-tocopherol, 200 mg alpha-tocopherol, or 7 gm beta-sitosterol per 950 calorie batch. The alpha-tocopherol was generously supplied by the Distillation Products Industries Limited and the beta-sitosterol by the Eli Lilly Company. One group was transferred to a diet high in corn oil and another was continued on the diet high in butter fat.

The percentage changes for the second eight-day period, shown in Figure 4, reveal that the alpha-tocopherol had no effect when fed at either level. The sitosterol, however, brought about a highly significant decrease of 21.2 per cent in plasma cholesterol. Those transferred to the diet high in corn oil showed a similar decrease amounting to 23.1 per cent.

The potent effect of this plant sterol in normocholesterolemic subjects on a diet high in butter fat was not expected on the basis of the results reported in the literature.[32] One possible reason for the uniform and significant response to this substance is that it was distributed uniformly throughout the diet, a feature that has been pointed out by Davis [33] to be of great importance if cholesterol absorption is decreased by formation of a mixed crystal complex with sitosterol. This mode of administration is to be contrasted with the usual procedure of

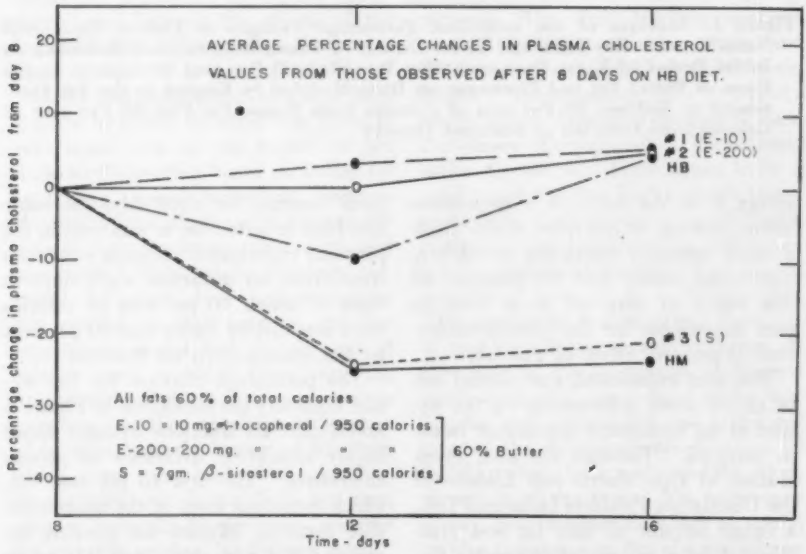

Figure 4—Average Values for Plasma Cholesterol of 46 Subjects During a Period of Eight Days on a Homogeneous Formula Diet in Which Butter Fat Supplied 60 Per cent of the Total Calories and During a Subsequent Similar Period in Which the Subjects Were Divided Into Five Groups and Placed on the Following Diets: Basal Diet (HB); Basal Diet Plus the Following Supplements per 950 Calorie Batch: 10 mg Alpha-Tocopherol (E-10); 200 mg Alpha-Tocopherol (E-200); 7 gm Beta-Sitosterol (S); One Group Was Transferred to a Diet Providing 60 Per cent of Calories in the Form of Corn Oil in Place of Butter Fat (HM)

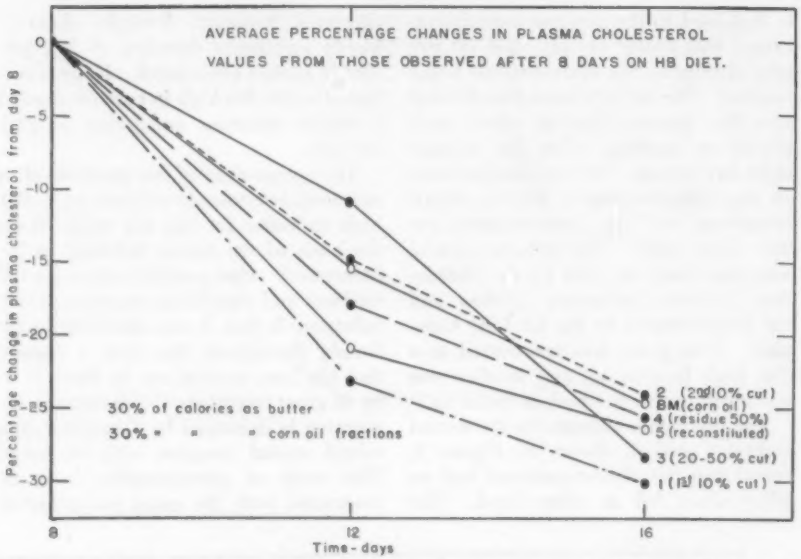

Figure 5—Averages of the Individual Percentage Changes in Plasma Cholesterol Noted Between Day Eight and 16 for Groups of Young Male Subjects Following an Initial Period of Eight Days on a Diet Providing 60 Per cent of Calories in the Form of Butter Fat and Placement on Diets Modified in Respect to the Fat Component as Follows: 30 Per cent of Calories from Butter Fat Plus 30 Per cent of Calories from Corn Oil or Fractions Thereof

giving it in the form of a suspension before, during, or just after meals. Such a result naturally raises the possibility, now being tested, that the presence of this sterol in corn oil is at least in part responsible for the plasma cholesterol depressant effect of this fat.

The next experiment was carried out to obtain some information on the nature of the cholesterol depressant factor in corn oil. Through the kind cooperation of Drs. Harris and Embree of the Distillation Products Industries Ltd., a large amount of this fat was fractionated by a process of molecular distillation in high vacuum into four fractions. The distillate was divided as follows: First cut up to 10 per cent, second cut 10–20 per cent, third cut 20–50 per cent, and the fourth fraction or residue 50–100 per cent. Forty-eight subjects ingested for eight days the same diet high in butter fat as was used in the previous experiment. Groups were then transferred for a further eight days to diets in which 30 per cent of calories were supplied by butter and 30 per cent by the various corn oil fractions.

The percentage changes for the second eight-day period shown in Figure 5 reveal that all fractions brought about highly significant decreases in plasma cholesterol. The first 10 per cent cut, which contained most of the unsaponifiable material, effected the greatest decrease (30.1 per cent), but this result could not be shown to be significantly different from the responses observed with the other fractions. The second cut brought about a percentage decrease of 24.2 per cent, the third 28.4 per cent, and fourth cut or residue 25.9 per cent.

That no potent material was destroyed during the distillation may be concluded from a comparison of the effects of diet BM which contained the original corn oil and diet No. 5 which contained the reconstituted oil prepared by combining appropriate amounts of the first, second, third, and fourth fractions. The decreases were 24.7 and 26.4 per cent, respectively.

In assessing these results it should be kept in mind that the mere elimination of some of the butter fat from the diet would by itself cause a decrease in plasma cholesterol. The changes observed here, therefore, are due to a combination of two factors—a decrease in the level of butter fat and the addition of corn oil or fractions thereof. Although there did not appear to be any effective fractionation of the plasma cholesterol depressant factor, the differences noted between the effects of the first two cuts is suggestive that some fractionation did in fact occur.

In the last experiment on which there is space to report an effort was made to gain some idea of the nature of the cholesterol elevating factor in butter fat by testing various butter oil fractions obtained by the process of molecular distillation from the same source mentioned previously. Thirty-eight subjects ingested for eight days a formula-type diet similar to that used in the last experiment, except that 60 per cent of calories were provided from corn oil. At the end of eight days groups were transferred to diets supplying 40 per cent of calories from the butter oil fractions which were comprised of a cut up to 10 per cent, one from 10–20 per cent, another from 20–50 per cent, and the last one, the residue, 50–100 per cent.

An examination of the percentage changes during the last eight days shows that all groups responded with highly significant increases in plasma cholesterol, the greatest increase being noted with the most volatile fraction. (First cut, 71.7 per cent; second, 29.3 per cent; third, 50.8 per cent; fourth or residue, 40.1 per cent; and the original butter oil, 41.3 per cent.)

Attention should be drawn to the fact that the increases in plasma cholesterol are due to a combination of two factors: (1) the elimination of the potent plasma cholesterol depressant factor from the diet by omission of the corn oil, and (2) the introduction of the plasma cholesterol elevating factor or factors in the butter oil.

There appears to be little doubt that a concentration of the latter material had been made in the first 10 per cent cut. The individual responses to the ingestion of diets containing the 0–10 per cent and the 10–20 per cent fractions tend to support this assumption. However, the differences in the average responses could not be shown to be significant. The first fraction contains most of the unsaponifiable material and the fatty acids of relatively short chain length. Investigations are currently under way to determine the role of these two classes of compounds in the problem under discussion. There seems to be a good possibility that fractions two, three, and four also caused elevations of plasma cholesterol greater than those that would have occurred on transfer from a diet containing corn oil to a fat-free diet. This apparently indicates that there are at least two factors present in butter oil that tend to elevate plasma cholesterol levels—one of these, present in the first fraction and presumably due to the nature of the unsaponifiable fraction or the short chain fatty acids, and the other, present in all fractions. The latter may simply be a nonspecific effect of triglycerides in general in the absence of any plasma cholesterol depressant factor such as is present in corn oil.

In conclusion, there is no doubt that lipids, in the form of triglycerides, plant and animal sterols, and substances associated with them, affect significantly

the nutrition and well-being of the human organism in ways that have yet to be clearly delineated. The various effects of the so-called essential fatty acids, degree of unsaturation, and chain length have still to be determined adequately. Apart from the fat-soluble vitamins in the unsaponifiable matter, the nutritional role of the various sterols together with other substances of known and unknown composition is a problem for future investigation.

Many, if not all of you, are concerned as we all should be with the practical implications of this and similar work. These implications are obvious. But are we justified at the present state of our knowledge in recommending to the public that they drastically limit their intake of fat, particularly animal fat? If one accepts the thesis that high plasma lipid levels potentiate the development of atherosclerosis, there appears to be some justification for this recommendation. However, there is a possibility, and it is a rather strong one, that there may be other dietary factors that have as great an effect on plasma lipid levels as does fat. Although it is our belief that one should make haste slowly in this field and be absolutely sure of one's ground before making sweeping proposals, there would appear to be little argument with the view that the present trend toward a relatively high consumption of fat should be stopped and indeed reversed to some extent and that this aim should be brought about by a decreased intake of fat of animal origin.

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Four Years of Progress in Health Insurance

J. F. FOLLMANN, JR.

What is the role of private insurance in financing the costs of medical care? Over the past few years insurance companies have been active in dealing with this problem. What have they accomplished? Answers to these and other significant questions are presented in this factual survey.

The past four years have witnessed a phenomenal progress in the field of private voluntary health insurance. This progress is one which could hardly have been foreseen even a decade ago. It is a progress which moves in many directions and one which is a tribute to American initiative. Jointly and severally the various elements which make up this progress are an important contribution to the increased well-being of the American people. They serve increasingly to aid the people of the United States in paying for the costs of medical care on a risk-spreading basis by providing a voluntary means by which the majority of the people can protect themselves against the effects of the occurrence of sudden and sizable medical costs. These costs would otherwise place a serious drain on personal resources, on the one hand, or on the providers or facilities of medical care on the other—or on local, state, and federal governments.

Number of Persons Covered

One indication of the rapidly increasing effectiveness of private voluntary health insurance is the number of persons having insurance protection. Between December 31, 1952, and December 31, 1956, the number of persons having protection against hospital expenses increased from 90,965,000 to 116,000,000, an increase of 27.5 per cent. This number includes those protected both by insurance companies and various types of prepayment plans. For insurance companies alone, the increase was from 47,272,000 to 66,295,000, an increase of 40.1 per cent.

Protection against surgical expenses increased, in this same period, 39.8 per cent for all types of insurers and 39.0 per cent for insurance companies. Protection against regular medical expenses increased 81.9 per cent and 108.5 per cent, respectively.

Amount of Benefits Paid

Another indication of the increasing effectiveness of the private health insurance mechanism is the dollar amount of insurance benefits paid to the American people yearly. In 1952 the amount paid by all types of health insurers was $2,083,000,000. In 1956 this amount was $3,640,000,000, an increase of 74.7 per cent. For insurance companies alone the amounts were $1,172,000,000 and $2,060,000,000, respectively, an increase of 75.8 per cent.

These figures represent an important contribution to the medical bill of the nation and particularly to those individuals or families who are unfortunate enough to incur sizable medical bills.

It is to be noted that these figures do not represent the total contribution of private insurance to the medical costs

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of the American people. Other types of private insurance share appreciably in paying for the costs of medical care. An indication of this additional dollar contribution to the nation's medical bill can be found in the following figures. In 1956 benefits paid under personal accident insurance policies were $8,980,000. Group accidental death and dismemberment benefits were $48,821,000. The amount paid under Workmen's Compensation insurance exceeded $920,000,000. The amount paid under medical payments coverage written in conjunction with policies of liability insurance in 1954 is estimated in excess of $72,400,000. In addition to these sums, $990,000,000 was paid by insurance companies in 1955 under bodily injury liability insurance policies. A sizable proportion of this sum would be used to pay the costs of illness and injury. Still other moneys are made available to pay the costs of medical care by the various types of life insurance and annuity benefits, aggregating $5,878,200 in 1956. These moneys are available to either the insured person or, after his death, his beneficiaries. The amount used by either to pay for medical care is not known, although these moneys must represent an important contribution to the medical bill of the nation.

Number of Insurance Companies Writing Health Insurance

Still another indication of the growing distribution of private health insurance is found in an examination of the growth in the number of insurance companies offering such protection to the public. On January 1, 1953, there were 514 insurance companies of record actively writing accident and health insurance in the United States; by January 1, 1956, this number had grown to 707, a growth of 37.5 per cent.

Other indications are found in the fact that during this period many companies, formerly limiting their activities to individual risks, entered the group-writing field. Hence, while the total number of companies in the health insurance field increased 37.5 per cent, the number of companies in the group insurance field increased 56.5 per cent.

These developments would appear to clearly indicate a growing awareness on the part of the insurance companies of the United States of the medical care problems of the American people and a desire, within the realm of their proper relatedness to those problems, to serve the American people by assisting them to pay for such care in such a manner as to avoid undue hardship or financial catastrophe.

Extension of Insurance Coverage Beyond Age 65

Other indications of the increasing effectiveness of private voluntary health insurance can be found in the broadened underwriting concepts by which more persons have available to them this form of protection.

One of these broadened concepts is that of making insurance protection more generally available to persons in the older age brackets. Continued progress is being made in this direction. Six principal methods are being used today by insurance companies to accomplish this, some of these having come into being in the last four years and the majority of the progress in this area having been made since 1952:

1. The Continuation of Group Insurance on Older Workers—A survey by the Bureau of Accident and Health Underwriters in 1954 indicated that of 43 companies writing 72 per cent of all group accident and health insurance, 37 made available the same coverage for active over-age employees as for others. The other six limited the cov-

erage in various ways. It would appear, therefore, that older active workers are or can be generally insured today in instances where a group insurance plan is in existence.

2. The Continuation of Group Insurance on Retired Workers and Their Dependents—The survey previously referred to revealed that of the 43 insurance companies writing 72 per cent of all group accident and health insurance in this country, 36 in 1954 wrote coverage on retired employees and their dependents. It is reasonable to expect, since this is a recent development, that more companies yearly will make this coverage available.

While the number of retired workers presently covered by this means is not known, nor can the future potential with respect to those who will retire in the future be estimated, some significant indications are available.

A recent study by the Bureau of Labor Statistics, covering nearly five million workers under 300 collectively bargained health insurance plans, shows that for 35 per cent of these workers hospital and surgical benefits are continued after retirement. For 97 per cent of these, the coverage is also continued with respect to dependents. While the benefits are sometimes reduced after retirement or made subject to special limitations as to aggregate amount payable, in 80 per cent of the cases there was no reduction in hospital and surgical benefits. For 40 per cent of the employees under these plans, the benefits for retired workers and their dependents are paid for entirely by the employer.

Another recent survey of 160 group plans made by the Health Insurance Association of America sheds further light on this development. As of January, 1953, 24 per cent of groups with insurance company medical care plans provided for a continuance of coverage at retirement through the group plan. Today, 48 per cent of these plans provide for this coverage at retirement.

Not only has there been an increase in the proportion of plans providing for continuance of coverage at retirement but the types of benefits and amounts of benefits available at retirement have both broadened and increased.

3. The Continuation on an Individual Policy Basis of Coverage Originally Provided by Group Insurance—It is now general practice in the field of group insurance to make available the right of conversion to an individual or family policy upon termination of employment or membership in the insured group. This is an important privilege to older people who leave the group due to retirement and is one which has largely developed since 1952.

4. The Continuation of Individual Insurance Previously Purchased—A survey conducted by the Bureau of Accident and Health Underwriters and the Health and Accident Underwriters Conference in 1955, indicated that by 1954, of 186 companies queried, half would consider continuing policies with no age limit and 15 would continue until age 75. Underwriting practices at present are probably more liberal than indicated by this survey of 1954 practices.

5. The New Issuance of Individual Insurance at Advanced Ages—The same survey also indicated that by 1954, of 186 insurance companies queried, 106 would consider new risks for hospital expense insurance above age 60. This number is probably larger today. The age to which these companies will consider new risks varies, with such limits as 65, 70, 75, or 85. Eleven companies surveyed had no age limits.

6. The Issuance of Individual Insurance which Becomes Paid Up at Age 65—Several companies, cognizant of the fact recognized by many that the desirable form of policy would be one in which the policy would be paid up at

retirement age, have recently made available such a policy. The concept is that of enabling the policyholder to purchase his insurance during the productive years, as has been done for many years in life insurance. The increase in premiums is about 5 per cent at the earlier years and about 30 per cent at age 55. This development must, of course, be looked upon as experimental. The fact that it is a significant contribution can hardly be questioned.

There is no accurate over-all statement of the number of older persons presently insured. Available estimates place the number variously at 26 per cent and 35 per cent of the total of those over age 65. These estimates are not current, however, and the rapid development in insuring this group of the population would unquestionably indicate that the number is greater today and will continue to grow. For example, a recently completed study by the Michigan State Medical Society indicates that 86.2 per cent of the people in Michigan over age 65 have some form of health insurance and that 80.2 per cent of retired persons are so insured. As future retirements overtake the increasing number of insured persons now in their productive years, the number of older persons insured should increase appreciably in the years to come.

One thought might well be stated here, although it is germane to all other facts pertaining to private health insurance: that is, that while insurance can provide the facility by which people are enabled to spread the risk and protect themselves against sudden and sizable medical bills, the people as individuals, or employers or labor union leaders as persons interested in the welfare of their employees, must choose to purchase this protection. Insurance has to compete for the available dollar in either instance. With respect to the individual, it has to compete with all other consumer goods and services among which the individual makes his choices.* With the employer, it has to compete not only with all the costs of production, including salaries, but with other types of so-called fringe benefits desired or demanded by the employees.†

Extension of Group Coverage to Those Employed in Small Groups

Another development in recent years of appreciable import is the extension of the group insurance principle to persons employed in small groups. This is being accomplished in several ways. One of these is the expansion of traditional group insurance technics to include the enrollment of associations of small employers. In this manner small employers, who individually have insufficient numbers of employees to qualify under traditional group insurance requirements can, by aggregating their employees through associations to which the employers belong, qualify for group insurance. Another method used, having similar intent, is that of insuring trade associations. Still another similarly intended approach is that of insuring the entire membership of labor unions whose members are generally em-

* Dr. S. S. Huebner, emeritus professor, University of Pennsylvania, writing recently in a publication of the American College of Life Underwriters, makes this statement: "$4.5 billion of annual premiums for health insurance seems unusually small. Compare this total with such annual expenditures in the United States as $9.0 billion for alcoholic beverages, $5.5 billion for tobacco, $23.0 billion for automobile purchases and operations, $2.7 billion for television and radio, and $6.0 billion for cosmetics, toys and sporting goods and spectator amusements."

† A 1956 study of 1,000 corporations by the Chamber of Commerce of the United States shows that fringe benefits vary from 5 per cent to 50 per cent of payrolls, that the average in 1955 was 20.3 per cent of payroll or $819 per year per employee, that 96 per cent had employee insurance programs. Of the 20.3 per cent of payroll for fringe benefits, only 2.1 per cent was for insurance programs.

ployed by small employers. These three approaches have been used increasingly by insurance companies for the past several years.

Another method used by some insurance companies is that of franchise or wholesale insurance. This form of insurance was, in fact, developed some years ago for the specific purpose of presenting some of the advantages of the group insurance approach to many of those groups who, because of statutory or group underwriting limitations, could not obtain group insurance. In this manner groups of five or more persons are insured and the approach has been extended to include groups of professional persons who at one time were not insurable under group insurance methods as a result of statutory limitations.

Since 1952 a still further approach has been developed to insure those employed in small groups: the direct writing on a group insurance basis of groups of smaller than 25 lives. Many companies have been experimenting in this approach and the number of those continues to increase. The experiment has been aided by the reduction of the statutory minimum in several of the states. As a consequence many insurance companies today are writing groups of 10 or more employees and several are insuring groups as small as 4 employees. In several other states, however, the experiment is still limited by statutory requirements.

Increased Coverage of Dependents

Another development in recent years which has appreciably served to extend the benefits of private voluntary health insurance to more persons in the United States is that of insuring the dependents of insured policyholders.

In 1956 the Bureau of Accident and Health Underwriters surveyed its member companies to determine the usual or normal dependents definitions insured by its member companies as well as the extent to which variations from the norm occurred. That survey revealed that today insurance companies are covering a spouse; the insured's own unmarried children, foster children, and children mentally or physically incapable of self-support; and collateral or sponsored dependents resident in the insured's household and principally supported by the insured such as brothers and sisters, grandchildren, parents, grandparents, and in-laws.

In all instances there must, of course, be a willingness on the part of the individual or the employer to pay the costs of such insurance.

The number of dependent persons presently insured by insurance companies and other means at the end of 1956 was as follows:

	All Forms of Voluntary Insuring Mechanisms Including Insurance Companies	Insurance Companies Alone
Hospital expense coverage (of 108 million persons covered)	67 million	38 million
Surgical expense coverage (of 92 million)	59 "	37 "
Regular medical expense coverage (of 55 million)	37 "	17.5 "
Major medical expense coverage (of 5.3 million)	(not reported)	5.1 "

Development and Extension of Major Medical Expense Insurance

Another indication of the increasing effectiveness of private voluntary health insurance is found in the recent extension of the more traditional forms of insurance coverage so that greater protection is afforded the public against the more serious or catastrophic medical costs which cannot be budgeted against by the average person and which can seriously impair or wipe out individual resources.

The most important and promising of these is the development and spread of major medical expense insurance and comprehensive coverage. Under these forms of coverage, insurance is generally provided for practically all forms of medical expense in or out of the hospital. This includes charges for hospitalization, physicians, private registered nurses, surgery, physical therapy, x-ray and radium treatment, x-ray and laboratory examinations, ambulance, prescription drugs, medicines, blood, appliances, care for accidental injury to natural teeth, and maternity complications. Generally not covered are expenses covered by Workmen's Compensation; expenses for eye refractions and glasses, hearing aids, dental care not required as a result of accident, check-up examinations, and luxury hospital accommodations; charges in government hospitals; charges resulting from war; and normal maternity expenses. Some policies also exclude expenses resulting from nervous ailments, care in nursing homes, insanity, alcoholism, and drug addiction. Underlying all such plans today is a deductible amount,* a co-insurance feature,† and a maximum amount of benefit.‡ Still being in many respects experimental, these underlying principles vary among plans.

It will be seen from this brief description that an entirely new concept has evolved with respect to insuring the costs of medical care. The earlier and traditional approach segmented by types of medical care has been supplanted by a blanket approach.

The growth and increased public acceptance of this new coverage has been extraordinary. Between December 31, 1952, and December 31, 1956, the number of persons protected by major medical expense insurance has increased from 689,000 to 8,876,000, a growth rate of 1,188 per cent. That this growth may be expected to continue is amply demonstrated by the fact that in 1952, 24 insurance companies were offering this coverage. By 1956 this number had grown to 129 companies.

This development presents to the American public these decided advantages: (1) protection against sizable and unpredictable medical bills; (2) protection against the costs of the vast majority and more usual forms of medical care; (3) the broadest coverage for a given premium by the elimination of budgetable expenses and by providing an incentive to the policyholder-patient to select the most appropriate type of care; and (4) removal of any need for duplicate or supplemental coverage, with consequent saving to the policyholder.

Increased Coverage of the Rural Population

One further and important extension of voluntary health insurance is to be noted: that is the increased availability

* Varying from $25 to $500. The purpose is to eliminate the smaller, more easily budgetable costs, thus reducing the cost of the insurance.

† Generally 20 per cent or 25 per cent. By this means the insured-patient pays 20 per cent and the insurance company 80 per cent of all medical costs exceeding the deductible amount, thus giving the insured-patient an interest in retaining costs to the reasonable and necessary.

‡ Usually ranging from $2,500 to $10,000 or more.

of insurance to the rural population. This extension involves not the broadened underwriting concepts or the extension and broadening of coverages previously discussed but, rather, the more intensive development of sales and merchandising technics by which persons in rural areas can be made aware of the need for and, with greater ease, can purchase insurance protection.

There are probably many factors, yet insufficiently studied, which to date affect the attitude of the farmer toward health insurance. Medical facilities are known to be less available and less convenient in many rural areas. This, coupled with a closer, more self-sufficient family life tending more toward home care in the event of illness or accidents, can have an important bearing on the concept of the need for health insurance. The level of general education also appears to play a role. In areas where this is higher, there is a more receptive attitude toward insurance, prompted perhaps by a greater recognition of its need combined with higher income levels. It is also possible that the farmer has received insufficient information concerning the availability and the need for insurance. Many agencies, including the various farm organizations, the insurance companies, and government, could do much to overcome this.

The number of the rural population insured today is not known. There are extant some estimates, however, which furnish clues on a proportionate basis. A study of the people in Ulster County, N. Y., in 1952, revealed that 53 per cent of rural households were protected by some type of health insurance. The percentages broken down into "farm," "other rural," and "village" did not vary appreciably.

On the basis of a family survey conducted by the Health Information Foundation in 1954, it was estimated that 45 per cent of rural farm and 57 per cent of rural nonfarm families were covered by some type of health insurance. These figures were compared with an estimated 70 per cent for urban families.

However, a study of four rural communities in North Carolina in 1953 made by North Carolina State College reveals that 60 per cent of the population was covered. This higher percentage apparently resulted from the efforts of a very active community development program.

It must be noted that these studies are not current. Certainly the number of persons covered today would be greater since, as has been shown, the number of persons covered in the United States generally increased 27.5 per cent between 1952 and 1956. So also would be the proportions, this latter being more pronounced since the rural population is increasing at a lower rate than the urban population (8 per cent from 1940 to 1950 compared with 19 per cent) and since the rural farm population has actually declined 24 per cent between 1940 and 1950 and another 12 per cent from 1950 to 1955. For example, the recently completed Michigan study, previously referred to, indicates that 80 per cent of the rural population in that state has some form of health insurance. For farmers and farm workers the figure given is 79.8 per cent.

In general, there are several recent developments among the rural population which should serve to encourage the marketing of private insurance in rural areas. These include improved transportation, widened communications, broader and higher degrees of education, extended and improved hospital and medical facilities, and generally improved economic conditions, which in turn serve to increase both the ability to pay as well as the desire for security and protection.

Most accident and health policies in rural areas have been sold on an individual or family basis. The marketing approaches are several. The most com-

mon is by direct personal solicitation through the agent. A study made by the Health Insurance Association of America in 1956 of the number of health insurance agents in the counties of New York State revealed that there were 2.01 agents per 1,000 population in all of New York State, 2.32 in urban counties, 1.69 in semiurban counties, and 1.91 in rural counties. The rate of growth in the number of agents between 1950 and 1956 was 64.4 per cent in urban counties, 75.1 per cent in semiurban counties, and 56.6 per cent in rural counties. It would appear from this study that the availability and growth of agents in the rural areas does not suffer in comparison with urban areas.

Other marketing approaches include direct sales through advertising and direct mail, and publication subscription tie-in sales. There would appear to be some natural advantages here, since it is expected that an appreciable amount of the merchandising of other commodities and services to rural people are accomplished in this manner.

In more recent years, several approaches have been tried by insurance companies to provide coverage to the rural population on a group or mass-selling approach. The advantage, of course, is in providing mass-media for more quickly insuring the rural population and in reduced cost of insurance to the insured persons. By these methods, rural people are approached through farm bureaus, granges, cooperatives, creameries, farmers' unions, poultry producers' associations, elevators, oil associations, credit unions, stores, rural electrical associations, community enrollment, depositors of local banks, church groups, and educational organizations. These organizations must have the qualities of not having been organized for the primary purpose of obtaining insurance, of having been in existence a reasonable period of time, of having the probability of reasonable permanency, of having a reasonably stable membership, of having prestige and respect with the membership, of having a salaried staff officer, and of being a well organized, closely knit group.

Forecast for the Future

Private insurance has not been unaware of the social and economic challenge with which it is faced. The quantitative and qualitative developments discussed here bear evidence of its response to that challenge. The fact that the coverage provided by insurance companies and prepayment plans has become increasingly effective and adequate could not be questioned by any reasonable person. Today it plays a significant and vital role in the financing of the costs of medical care. It has become an important and human segment of the entire American economy. As such, it serves as a means of relieving the government of the responsibility for using public funds derived from taxation in order to provide medical care for a large proportion of the citizenry. That this could have become a responsibility of government had it not been for the response of private initiative and means is borne out by the necessity for such action on the part of government in a great many other nations where a broad and healthy private insurance mechanism was not in existence. The startling rapidity with which private means have responded in the United States is a phenomenon which is probably unique to our nation and its people. It serves best to preserve the American heritage of the dignity and independence of the individual while concurrently representing a real response to evolving socioeconomic patterns.

There is no present indication that this response by the private insurance mechanism will be retarded or brought to a halt. On the contrary, it appears reasonable to expect that if so much

progress has been accomplished in the past four years, and in so many varied areas, private voluntary health insurance will continue increasingly to serve the public welfare.

Private insurance is justifiably proud of the accomplishments it has brought about, accomplishments which were not even thought of twenty years ago. It is humble before the privilege which has been accorded it under our national tradition. It is devoted to the principle of lending its best efforts to the continuation and extension of this service.

A National Commission on Health Careers

A National Commission on Health Careers to plan ways for meeting the acute need for qualified health personnel in the nation has been established by the National Health Council. Its chairman is Leonard A. Scheele, M.D., president of Warner-Chilcott Laboratories and former Surgeon General of the Public Health Service.

Among the tasks to be undertaken in what is expected to be a total approach to the problem are:

1. Stimulating health career programs at local, regional, and national levels
2. Stimulating public recognition of the need for adequate staffing of health services
3. Making known the possibilities of careers in the health field
4. Encouraging continuing studies of the maximum effective use of highly trained public health workers
5. Making known educational facilities for potential health workers, as well as the availability of such services as aptitude testing and scholarships and loan funds, and salary ranges for various skills in the health field.

The Commission is the outgrowth of the National Health Forum of 1954 on "Staffing America's Health Service" which inspired the Council's Health Careers Project. With the assistance of the Equitable Life Assurance Society of the United States and the cooperation of many groups, particularly vocational guidance workers, the "Health Careers Guidebook" and "Partners for Health" were developed. These have been distributed to high schools and junior colleges the country over and widely elsewhere. The film, Health Careers, has also been produced for similar use. Help and encouragement have been given to the development of community health careers programs.

In addition to Dr. Scheele the Commission is made up of 13 members representing public health, labor, industry, and education.

Manpower—The Achilles' Heel in Public Health

HOWARD ENNES, M.P.H., F.A.P.H.A.

Public health is people! It may sound like a truism, but it becomes a problem when there are not enough trained people to do the job. Here Mr. Ennes examines the causes of the manpower problem, what is being done about it, and what more could be done.

My thesis may be stated briefly: It is, simply, that shortages of health manpower present a crucial problem to our nation—that you and I must do something about them, and that we can do something about them. As a footnote, there is every reason to expect that health manpower shortages will get worse before they get better.

When we talk about health "manpower" we mean, of course, to include "womanpower." Nor are we thinking merely of the classical health professions—physicians, dentists, nurses, pharmacists. We must take in the whole vast array of callings which make up today's health service pool of some two and one-half million people who are engaged in more than 150 major occupational categories—professional, technical, administrative, clerical, maintenance, and others. In thinking about health manpower, we must think about physical therapists, nutritionists, and laboratory technologists; about medical secretaries and nurses' aids and medical record librarians; about social workers and health educators; about hospital file clerks and laboratory assistants, and a host of others.

Shortages in some fields are mild, in others extreme; but unfortunately for the nation serious shortages are the most common. In fact, in some health career fields there are as many as four vacant positions for every trained applicant.

It is not suggested that there is much new or startling in these figures. Public health people and those in voluntary health work are among the first to feel the effects of the shortages—of manpower, of facilities, of funds. But the point is that today's and tomorrow's health manpower shortage is not merely a matter of concern to professional people and to dedicated volunteers. It is a crucial problem for all the people.

Inevitably—and not far into the future—these health manpower shortages can become disastrous to the whole public—to the farmer and the factory worker, to the engineer and the attorney, to the truck driver and the banker, to the housewife and the career woman, to the young and to the old.

If this be so, then we have a problem on our hands and it is crucial to appreciate that we are facing a long pull. Slogans and campaigns will not be enough. The task is more than here and now; ours is the moving target of "assuring more hands for tomorrow's health."

The press of day-to-day demands makes it easy to side-step serious consideration of the future. In so many areas of life these days we seem to be encouraged to take the easy way out, to be complacent, to rationalize that somehow someone will take care of things. Nonsense, of course. We—as individuals and as professional people—must accept responsibility. And the re-

sponsible approach is a long-range one, a cooperative one, that reaches directly into the future by dealing with the young people who are the future.

We must think and act in long-range terms. Consider, for example, the implications of the very concrete fact that, as a nation, our needs and our desires for health services are steadily mounting. This results from a complex of trends: dramatic scientific advances, increasing public awareness of needs and potentialities of health services, development of better and more health facilities, increasing financial support, both in breadth and depth.

Population Factors

But possibly the most significant factor is that of our growing population. Beneath the gross data of our population expansion there are hidden implications for the health field which are nothing short of revolutionary. In less than a generation we will see an increase of nearly 55 per cent in our total population. By 1970 there will be about 72.5 million more Americans than there were in 1940.

One of the earliest causes of this remarkable growth was the great decrease in mortality rates among infants and young children. The second cause has been the marked increase in our birth rate and a third factor is the lengthening of life expectancy in every decade of life.

These three elements not only have increased the total number of persons in our population, but have changed the very shape of our population. Now and even more in the future the nation's population bulges at the extreme ends of the age scale. In health manpower terms this fact presents two major considerations:

First, are the heavier service demands, particularly on the part of the persons in the older age groups. Our future "senior citizens" will comprise about 10 per cent of our total population, yet they probably will require about 20 per cent of the nation's health services and facilities, and these are likely to be overextended in trying to meet the requirements of the rest of the population.

From a health manpower standpoint the second consideration is that the squeeze is on the more active, more productive age groups. There has been a good bit of misinterpretation of the implications of the great increase in young people resulting from the recent high birth rates. The fact is that this group will not be available for some time and that the largest potential fresh labor resource are the young people now coming into the 20–29 age group. But because of the low birth rates of the depression years, this group will be smaller than it has been for the last two decades. It will be the mid-sixties before the postwar baby boom begins to have a helpful effect on our personnel shortages. The full impact from recently increased birth rates will not come until 1970. Even then the problem will still be with us, not only because many more people (about 25 million more) will need services, but because training takes time—lots of it!

In summary, then, by 1960, 70 million Americans will be under 15 or over 65. Between 1950 and 1960 this group will have increased by 32 per cent while the corresponding increase of those in the productive mid-group will be only 9 per cent. The health services simply will have to compete with the rest of the economy for the members of this small, new labor force . . . and already the competition is tough!

It appears that the squeeze is also on

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any tendency to complacency. Despite real strides in improving the quality and the output of our technical and professional training programs over the past 25 years, recruitment and training of the professional and technical people needed to man our present and developing facilities and services have lagged far behind the demand.

The result is that America does not have the health personnel necessary to meet the current and growing demands for health services. It probably is true that we are not prepared today to provide the level of services called for even a decade ago! Clearly we must tap every resource to recruit and educate, in adequate numbers, competent and dedicated people for careers of service in the health sciences. Truly, this is the Achilles' heel of public health.

Put it this way: Science has learned a great deal about saving and prolonging life, reducing disability, and thus making all of life more worth living. But there is a great gap between what we know and our use of that knowledge to actually assure longer life and more health and happiness at every age.

It takes many things to close the gap: money of course—and facilities. But it also takes imagination, diligence, leadership—in short—people. The vital lever which is essential to the closing of this gap is health manpower: dedicated people, well trained people, enough people.

We shall have to be creative in meeting this problem—and honest and democratic, too. The need is too great, the stakes too high to do less than appeal aggressively to and accept all those who have the latent capacities and compassion for health service. We need the able people, whether of the majority or of a minority—including those over 40, including women, including Negroes and American Indians . . . including all ethnic and nationality groups . . . and including also the constitutional nonconformists who so often provide the vital spark.

The alternative to meeting our health personnel needs creatively is to allow the gap to widen even more between what we know and what we do. We simply cannot hesitate, cannot remain in status quo ante.

Five Key Questions

As professional people and volunteers, as people concerned with the health of the whole community, we might profitably ask ourselves a few questions:

First, are we making the best use of our available personnel and resources? Does our pattern of utilization match their pattern of training—are we applying professional skills to problems which require professional action, or are we dissipating our resources by inadequate supportive services? If our own houses are in order, are we encouraging economical utilization of personnel resources on the part of the institutions and agencies with which we work cooperatively?

Second, are our programs developed to the point that real needs are being recognized and outworn services reorganized? Are we trying to do what is necessary—or only what is possible with present personnel and other resources? Do our organizations and our communities know that there are unmet needs which require health personnel as well as other support?

Third, are we providing the opportunity for our health personnel at all levels—professional, technical, service—to grow and develop in their jobs? Is the opportunity for inservice training a real one, or a paper one? And are we grappling with the problem of basic training facilities and programs right in our own community? Are we acknowledging that we cannot depend on someone else, somewhere else, to provide the basic training for the numerous types

of health personnel that we need right here in our own back yard?

Fourth, are we energetically helping in the recruitment of new personnel into our own fields of special interest? Are we remembering as we do this that the success of any particular health program relates in a variety of ways, direct and indirect, to the success of programs of other agencies—who also have personnel needs? Do we accept the fact that soundly conceived basic general community health services, largely tax-supported, are essential to the long-range efficiency of any community health program and that strong staffing here, too, is vital?

Fifth, and finally, do we recognize—and act on the recognition—that we have responsibilities to ourselves and to the future to put our shoulders to the wheel of the over-all health career movement? Do we accept our responsibilities as leaders in community health to significantly aid, right here at home, in enlarging the basic pool of manpower for health? And do those of us in public and voluntary health agencies and citizens' groups realize the vital—and I do mean, vital—importance of refurbishing community attitudes toward health services and toward health occupations?

To these questions, and to ourselves, we owe candid, constructive consideration. As to the last posed topic, a review of some recent history and current developments on the national scene may be in order.

The Health Careers Project

The national picture began to come into focus in 1954 when the National Health Forum of the National Health Council met to discuss "staffing America's Health Services." Participating in the forum were, of course, people from the country's major professional societies and health agencies, both voluntary and official. But in 1954 a new group was added to the forum deliberations—people who had been brought in at the suggestion of the late and distinguished Dr. Alan Gregg * of the Rockefeller Foundation. These were representatives of the vocational counseling and guidance field.

They brought a new dimension to the discussions, because the counselors were in direct communication with the young people who, after all, we in the health field have to depend on to carry on. Quite candidly the counselors revealed (1) that they were being swamped with "one-shot" and "glamorized" recruiting appeals in the health field; (2) that the impact on guidance people was one of frustration because of confusion, contradictions, and our failure to coordinate; and (3) that by and large, neither guidance counselors nor students really had any idea of what were the actual opportunities for careers in health.

This set a lot of people back on their heels and started a chain reaction that now is beginning to make an impact throughout the country. An immediate result was a shift in the way the health people looked at their personnel problem. The forum identified three action areas: (1) the need for specific recruiting interests to work together more closely for the good of the entire health field; (2) the value of bringing vocational counselors in more actively as advisers and as informed participants in health career development; and (3) the necessity of providing counselors and other school advisers with practical and usable information about the entire health field, preferably in a single document.

It is a matter of pride to report that within a matter of hours of the ad-

* In Dr. Gregg's memory, and with the approval of Mrs. Gregg, a memorial fund has been established by the National Health Council. Proceeds will support health careers activities.

journment of the 1954 National Health Forum the chief medical director of the Equitable Life Assurance Society—speaking as a member of the National Health Council Board of Directors and as a representative of a Sustaining Member of the Council—proposed to the National Health Council that the health agencies of the nation, working through the Council, initiate a program of community action on the broad front of health personnel needs and that the program be started by developing and distributing "careers in health" material for the information of every guidance counselor, as well as school administrators and teachers, and every career- and job-conscious student in every high school in the nation. This was the origin of the Health Career Horizons Project. And thus began a period of intensive activity on the part of the staff of the Bureau of Public Health of the Equitable which carried creative and operational responsibility for the initial phases of the Health Careers Project.

Little evidence of concerted effort in any area was found. There were only scattered data, either as to shortages or needs. We found "hit-or-miss" recruiting efforts, essentially "hard-sell," "one-shot" undertakings. It developed that the guidance people were quite correct about the somewhat cavalier approach by health people to the basic concept of career development as contrasted to recruitment. The professional people wanted to solve their problem—to get people on the job—and they seemed little concerned about the effect on the people whose lives would be involved. It was sort of—"what's good for health fields is good for the country."

So we began by trying to identify the problem, and on the basis of the facts to fashion an approach consistent with the needs not only of the health field, but of the individuals and the communities concerned.

We concluded that somehow young people, along with their families, friends, and their communities, must be stimulated to stop, look, and listen as they approached the choice of future careers. The job was to help them consider the importance of health careers when making job and career choices. The question was, of course, how to get them to stop and listen—how to reveal the expanding horizons of health careers.

Youth's Conscience and Vision

It seemed that part of the answer, at least, was to challenge the conscience and the vision of the nation's young people at the time and at the place they took the first big step toward their career decisions. With the help of the guidance people we saw the time as being when students, as individuals, were ready. Most often this seemed to be in the last year or two of high school or in the early years of college, although it might be later in college or even in junior high school.

The place of decision-making was found to be in the school or college and at home. Here, with the help and guidance of parents and relatives, of teachers, counselors, and friends, decisions are reached. Furthermore, decisions reflected not only the individual's desires, what he knew about job careers, family views, his friend's urgings, and his counselor's advice, they also reflected the appeal of other fields in competition with the status and prestige of the health services. It was clear, also, that a vital element in career choice was the tenor of the times, essentially, the community's estimate of the importance of health and the social values attached to a career in the health field.

To succeed in enlarging the pool of manpower for health it seemed that at least two things had to be accomplished: first, we had to show individuals (mostly young people) that there actually were opportunities for productive careers of

service and satisfaction in the health field. Second, we had to aid in building a climate of informed public opinion concerning the nation's critical needs for health personnel and the validity of individuals making careers of health service.

This was the general frame of reference of the Health Careers Horizons Project, which in itself was merely a first step in a broad-scale careers-in-health cooperative undertaking of the professional and voluntary health organizations and other concerned education and citizen's groups. It was focused on a moving target: that of broadening the horizons of high school students and their families to job and career opportunities in the entire health field. This was necessary to clear the way for the individual health professions, technologies, and services to reach a larger and more selective proportion of the potential pool of recruits.

The immediate outcome of this work was the publication of the "Health Careers Guidebook" in the spring of 1955, less than a year after the idea was broached. The Guidebook represented a collaboration of some 57 national health agencies and professional societies, with the active and official participation of the National Association of Secondary School Principals and the National Vocational Guidance Association.

Within the 150 pages of the Guidebook are authoritative and reasonably comprehensive statements of some 156 health occupations. The statement of each of these was developed with careful consideration to the needs of the guidance counselor and of the individual student, and with scrupulous attention to facts, especially in such areas as job opportunities and salaries. Each also indicates active participation in the Health Careers Project by the professional society indorsing the facts and signing the statement. Developed also were a variety of supporting publications, posters, a motion picture, and related documents. In short, there is a wide range of materials available for those who want to participate in this approach to the health manpower issue.

Fortunately, we were in a position to bring these new tools into the direct line of vision of the educators and guidance people who had first and special need for them. The very first step was to provide the principal of every secondary school in the United States and every professional member of the National Vocational Guidance Association with a copy of the "Health Careers Guidebook" and supplementary material. Concurrently, the Guidebook and other Health Careers publications were made available without charge to local school administrators, junior colleges, and to other people and places involved—public employment services, vocational guidance units, veterans' centers, military service personnel offices, community libaries, and youth serving agencies, and in addition, of course, to the health agencies directly concerned with career development.

Community Action Trends

No one should be under the illusion that publication of a document, however well done, produces results on its own. The Health Careers materials were created as tools to be used by guidance counselors and health people on their home grounds. The most encouraging and important part of the Health Career Horizons story is local acceptance of responsibility for action. An indication of the level of interest is the fact that reports to the National Health Council show organized programs, placing special emphasis on health careers, are now under way in some 20 states and 55 communities. These are relatively formal and well organized activities, typically representative of a number of

organizations and interests in the community. There have been, in addition, hundreds of less formally organized and operated programs; the Health Careers staff of the National Health Council has been swamped with literally thousands of inquiries and requests for information and assistance.

The pattern of leadership and of participation is variable, as it must be. State and community "coordinating" groups, such as health councils, have been prominent. Often a voluntary health agency has provided the initial spark and followed through. In a few cases the state public health association has carried the ball. Rather consistently involved—more and more in key roles—are the official health agencies, even though they have been slow to get into the swing. As of now, every state health department is involved to some degree, as are several hundred county and city health departments, and all the federal units at national and regional levels. All this has developed in a matter of less than two years and the trend is still upward. There is reason to believe that this Health Career Horizons concept is being looked upon seriously as a long-range operation and not merely as a "one-shot" activity.

Current activities in three states represent various stages in the evolution of state-wide health career activities: in one, a 10-member public health careers committee has been organized; in another, the state health council reports 27 county programs, nine with formally organized committees; another state health council held a two-day health careers conference for leaders of more than 45 state-wide agencies and made plans to get the facts on personnel needs and to gear their health careers activities to these facts.

As a result of one local committee's efforts, a leading newspaper cooperated with health organizations, hospitals, and educational authorities to put on a health careers exhibit. In another city the program of the health careers committee is being expanded to improve the quality of health careers interpretation throughout the city school system, with the department of education actively cooperating. Another local committee reports that nearby nursing school classes are filled; according to the schools the quality of candidates has also improved.

Here are the top items in the first year-end report of one local health careers committee: membership covers the high school counseling services, the local employment service, the women's auxiliary of the county medical society, as well as community health agencies. Projects completed include providing all high school guidance counselors with Health Careers information kits, conducting a series of guidance counselors' field trips to hospitals and health centers, using exhibits and press releases to step-up public understanding, and staging a health careers radio panel as part of a regular local broadcast. Future plans called for providing counselors with information on college admission procedures and on scholarships, arranging field trips with parents and students as well as counselors, developing a series of health programs for local parent teacher groups and other interested organizations, and expanding the use of exhibits, radio, and television.

National Agency Activity

On the national scene the participation of national agencies in the Health Careers Project has broadened as more agencies become participants and deepened as agencies develop more intensive health career activities as an integral part of their own programs, this being a direction in which real progress can be achieved.

At present there are 99 national health agencies, professional societies, and related groups participating in one way

or another in the Health Career Horizons Project. Substantially all of these organizations have brought the health careers idea and publications to the attention of the affiliates throughout the country; nearly all have taken initiative in providing for the distribution of Health Careers materials through their own channels. Many, including those in the fields of education and counseling, have provided specialized advice and guidance.

Despite rapidly widening participation in the Health Careers Project, what has been accomplished thus far is hardly a beginning. Yet in the very spontaneity and continuity of activity throughout the nation there is clear proof that the Health Careers concept is contributing toward the solution of a critical problem of today—and for tomorrow. The Health Careers idea is making itself at home in the thinking of school people and health people. They in turn are taking the initiative and are translating it for the nation's young people into the reality of youth's day-to-day learning and experience.

Some Underlying Problems

We cannot, however, afford the luxury of feeling that because many of us are busy at this task that the underlying issues will be resolved. It behooves each of us to look into these in our own communities, our own agencies, our own professions. Have we critically examined our own programs and needs in the light of the over-all health manpower picture? Have we—will we—accept our responsibilities for action in our own communities and professional fields?

It is apparent that no approach to health manpower problems can be segregated from the larger issues presented by the growth of our population and the maturing of our democracy. We cannot realistically side-step, for example, consideration of the impact on health personnel procurement and training of the growing problem of providing adequate general educational facilities at both secondary and college levels.

The health field, as all recognize, relies heavily on training after high school. For every high school graduate who goes on with his education, another who is equally good "college material" does not. Even if the high school graduate does enter college, he is not necessarily among those "saved" for health careers or for any other specialized field. The appalling facts are that more than one-fourth of those who start out do not come back after their freshman year—that only about half of those who enter college see it through all the way. The implications here are obvious in terms of needs for basic guidance services, scholarships, and other financial arrangements. Possibly more acutely, this points to the need of a far more comprehensive system of community colleges than we now have.

As in the area of basic education, the crying need for more and better public understanding is a top-ranking element in the health manpower situation. It may very well represent a point at which a most unique and profitable contribution can be made by public health organizations, voluntary health agencies, and professional societies. It is incontrovertible that the level of public understanding and awareness, the status assigned and values attached to a problem by the public are the matrices in which progress takes place.

A Community-Professional Crisis

America approaches a critical juncture in its path toward adequate medical care and health services, as we see a rising demand for services coinciding with a deficit in personnel resources to meet the demand. It is no exaggeration to say that this represents a challenge to the conscience and vision of our youth;

a challenge to the practicality and public spirit of our citizenry; a challenge to the judgment and public responsibility of business interests instrumental in financing medical care and health services; a challenge to the wisdom and resourcefulness of our health and medical professions.

I submit to you as a fact that the real Achilles' heel in public health is the crisis in our health manpower resources and that it is incumbent upon us in the health professions and upon those of us who have accepted responsibilities in voluntary health agencies to see to it that the problem is understood by the community, and that steps are taken to deal with it before it gets out of hand. This Achilles' heel is not a problem for the professions alone, nor can it be protected by them alone. Mastering the problem of health personnel is a problem for all the people, because health is the natural resource of all the people.

Cleveland Health Museum Expands

The Cleveland Museum is adding 5,000 square feet of office space. This has been achieved through what might be called a barter transaction. A neighboring building has been leased in return for the use of 15,000 square feet of museum land to expand the neighbor's parking facilities.

The newly leased building will house the workshop of the museum and some of the offices, leaving the released space in the museum building for exhibits.

Another development at the museum is the "Share the Cost" plan of the Education Department. Under this plan schools that regularly use the museum's facilities will help to offset its expenses. Begun last year, it is expected that eventually the plan will add $5,000 to the museum's annual income. Schools that join the program have free use of loan exhibit material and films prior to their museum visits and priority on reservations. All schools, however, will continue to be serviced.

Public Health Administration in the United States and England—Baltimore and Birmingham Compared

HUGH PAUL, M.D., D.P.H.

Is the other fellow's garden really greener? In this paper Dr. Paul compares public health administration in a large American municipality with that of an English city and notes differing degrees of greenness.

The United States represents the most highly individualistic country in the world, and England is undoubtedly the most advanced Welfare State of modern times. One would therefore expect to see great variations in the nature, extent, variety, complexity, and purpose of public health practice and procedure in the two countries, especially in the sections concerned with the lower paid classes in the community. These variations are indeed considerable, but so are the similarities, and each country can learn much from a study of the methods of the other. It is probably true that American public health physicians know more about English public health than the English know of American; this is mainly because Americans may and do cross freely to England as very welcome visitors, without any international complications; whereas the Englishman, because of the European dollar shortage, must perforce possess immense pertinacity as well as luck before he can manage to make the westward trip. This is unfortunate, because at no time in public health history has an Englishman been able to learn so much from a study of American practice as at present, and at no previous time in the history of English public health has it been more necessary for him to recast his ideas and to study new ideas and new developments in other countries.

American public health administration, so far as it is known in England, is very much alive and appears to be developing fast on new and original lines. It is less traditional than the English, and the American commissioner of health is free from the fault of living in the past, however glorious the past may have been. He is not hidebound by tradition and lacks the tendency of the English medical officer of health, now fortunately being tardily overcome, of wishing to continue the old methods simply because they have been successful in the past. Attention to such new epidemiologic problems as the increasing toll of health and life from road accidents, cardiovascular diseases, diabetes, peptic ulcer, and other stress diseases is a much more marked feature of modern American practice than of English, and the employment of fully qualified biostatisticians and an appreciation of their value are more notable in the United States. The chief impression which an Englishman obtains from conversation with his opposite number visiting England from the United States is of intense enthusiasm, an enthusiasm

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which is searching and original in its outlook—unwilling to be tied down by precedence or tradition. One could perhaps make too much of this point, as it is to be expected that those administrators who are willing and anxious to take the trouble to come across to study English practice are more enthusiastic than the average.

Recent Changes in England

Public health administration in England has a glorious history, but during the past nine years, following the coming into being of the Welfare State in 1948, it has been subject to frustration, despair, and depression because of the mutilation of its powers by recent legislation. The National Health Service Act, 1946, took away from local authorities not only their general hospitals but also their infectious diseases hospitals, their tuberculosis senatoria, and their maternity hospitals. The present position is that the medical officer of health is responsible for the prevention of infectious diseases, but not for their cure. He is not responsible for either the diagnosis or treatment of tuberculosis, for the mass radiography schemes, or for the work of the tuberculosis physicians who administer the antituberculosis schemes; he is, however, responsible for the prevention of the disease and its aftercare. The supervision of dairy herds and the work of insuring that dairy herds are free from tuberculosis have now been given to the central government in London.

Following the loss of so many of their public health functions, English medical officers of health have passed through a phase of bewilderment and frustration, but this phase is now passing, as new fields of endeavor have opened up; and it is being realized that the future of public health in England is as full of brilliant possibilities as its members wish to make it and that the opportunities of the future will be as great as in the past.

American Visitors in England

Visits to England of distinguished American public health administrators, such as Dr. Ira V. Hiscock of Yale, Dr. Henry F. Vaughan of Michigan, Dr. John E. Gordon of Harvard, and others have enabled their English colleagues to learn much of American practice, and in April, 1956, at the Congress of the Royal Society of Health in Blackpool, England, interest was stimulated and intensified by the discourse of Dr. Huntington Williams, commissioner of health of Baltimore. Dr. Williams' address was a highlight of the conference.

Baltimore and Birmingham

It is therefore with great interest that medical officers of health have studied his annual report for 1955 as commissioner of health for Baltimore. At about the same time the annual report of the medical officer of health of Birmingham, England, was published, and as these two cities are of roughly comparable size a good opportunity arises to compare administrative practices in the two cities.

Birmingham has a population of 1,113,000, while Baltimore numbers 966,000. There are a few thousands of nonwhites in Birmingham, mainly Pakistanis and Jamaicans, but the nonwhite population of Baltimore is 265,000, a matter of over one-quarter of the entire population.

A study of the two reports shows at once the difficulty of comparing public health conditions. In England there is a State Medical Service which purports to provide complete medical care from conception to the grave (including the cost of burial); this care, as well as most of the city's health services, including institutional care, are free to

the citizen, in the sense that he pays through his taxes and local rates and not by specific payment at the time. Further, as some of the municipal services have been encouraged and developed by the state for over a generation, it is not surprising that public-provided clinics and home visiting services in England are used extensively. The reviewer, therefore, has the task of comparing a State Medical Service with a system which has a large voluntary element and is less subject to national or federal legislation. There is, however, some control in Baltimore of the city health services by the State of Maryland and there are federal subsidies on a "matching" basis. In Birmingham, as in other English cities, most of the health services are under the supervision of the central government, which makes a very substantial grant toward the cost; but though the government has considerable influence on policy, the actual administration is solely the responsibility of the City Council. Another difference between the two countries lies in the different position and status of the American commissioner of health and the English medical officer of health. Historically in England, the medical officer as a public officer has been accustomed and trained to avoid the limelight of personal publicity and public statements about his work are traditionally made by his chairman, an unpaid layman. This has serious disadvantages. In the United States, however, the commissioner is an important public figure and welcomes publicity for his department and his work.

Nevertheless, the similarities in Baltimore and Birmingham are more notable than the differences.

Vital Statistics

The vital statistics are rather similar. There are no significant differences in the birth rates, the death rates, the maternal and infant mortality rates, and the tuberculosis morbidity and mortality rates.

In the field of infectious diseases there were some differences. In each city diphtheria has virtually disappeared, only two cases occurring in Baltimore and four in Birmingham. In Birmingham, however, there were 24,714 notifications of measles and only 924 in Baltimore. The difference is mainly, though not entirely, due to the biennial incidence of this disease, for the Birmingham figure for 1954 was only 456, and for Baltimore 5,764. There were 2,955 notifications of whooping cough in Birmingham with five deaths and 140 in Baltimore with one death. The Birmingham incidence was high compared with other towns in England. But even so the difference is striking, for the incidence of this disease does not fluctuate violently from year to year, at least in England and Wales, and may or may not be due to the fact that the Birmingham municipality, unlike most other English towns, does not provide an immunization service in respect of this disease. Birmingham family doctors, however, immunized 3,433 children, but this is almost a negligible proportion of the children at risk in the city. Baltimore had only 33 cases of paralytic poliomyelitis, a surprisingly small number, while Birmingham had 38 cases, but it must be admitted that the fluctuations in the incidence of this disease are such that comparison is inadmissible. The low Baltimore figures were probably influenced by the immunization campaign which was carried out in the city for no fewer than 32,499 children received a first injection of the Salk vaccine in April and May, 1955. Of these, 30,755 children received a second injection in November and December. In England, vaccination against poliomyelitis was not introduced until 1956.

There were 23 deaths from syphilis

in Birmingham in 1955, and 59 in Baltimore.

Health Education

In the field of health education (the Birmingham term) and health information (the Baltimore term) both cities have been most energetic, though on rather different lines. Baltimore is fortunate in being able to use both radio and television and there were weekly programs sponsored jointly by the City Health Department and the medical and chirurgical faculty of Maryland. The end of 1955 saw the 852nd radio program and the 364th television program. Each week the commissioner issues a weekly Saturday Letter to the mayor which serves as a news release and resulted in 523 articles in the press during the year. The Baltimore Health News is published monthly and a Statistical Report is issued quarterly. No fewer than 3,600 copies of the commissioner's Annual Report were distributed, a figure which will surprise most English medical officers of health. There were also a large number of exhibits, posters, health meetings (982), film showings (528), and presumably a great deal of health information at the various maternity and infant clinics. In connection with the poliomyelitis campaign English hearts are warmed by the news that the commissioner himself gave the first injection. We have no definite information on the subject, but we suspect that the medical officer of health of Birmingham did not personally give the first injection in that city!

Health education in Birmingham is also intensive and highly organized. The British Broadcasting Corporation is so staid and old-fashioned in its outlook and methods that it would regard it as akin to sacrilege to allow a municipality to broadcast locally on matters of health, or indeed on any other matters! This is rather surprising, for in the olden days when the city of Hull enjoyed a local broadcasting service, the medical officer of health, Dr. Allen Daley, now Sir Allen Daley, made frequent broadcasts on topical matters of health. Perhaps in time, much time, the British Broadcasting Corporation may mellow somewhat and encourage local talks on health. In the meanwhile, Birmingham, unlike Baltimore, cannot use the radio and television in its health education program. The Birmingham medical staff do a considerable amount of teaching, but in addition the municipality employs three full-time organizers and 115 part-time lecturers. These teachers gave 4,223 lectures, of which 2,342 were in schools, 514 to youth organizations, and 1,367 to adult audiences. During the year 119 film shows were given. The press is invited to participate in health education and monthly articles on various aspects of health are written by members of the staff and submitted to the Birmingham daily and weekly papers. In addition, films, posters, exhibitions, etc., are freely used.

Maternal and Child Care

These methods of health education, however, are merely ancillary to the main educational activities of the health departments. Between the two wars it has been the custom in England and Wales for the great majority of expectant mothers to attend the municipal antenatal clinics, and for most infants under one year of age to be brought to municipal infant welfare clinics. Since 1948, when every person became entitled to the services of a family doctor, paid for from national funds, these attendances have dropped considerably. In Birmingham in 1947, 84 per cent of expectant mothers attended the municipal antenatal clinics, and attended regularly, but the proportion has now dropped to 25 per cent. This trend is

also apparent in the attendances at the municipal infant welfare clinics. But, although the numbers of infants attending in Birmingham fell in 1955 to 52 per cent of the births, elsewhere in the country the attendances still remain high. In the London County Council area the figure is still about 80 per cent. It is at these clinics that the mothers receive the most valuable and personal health advice, for in the quiet atmosphere of the doctor's room the mother has a personal, intimate, and unhurried discussion about the health of her child, and not of children in general. It is these heart-to-heart talks at the health clinics which represent English health education at its best. The family doctor could in theory give the same valuable advice, but if every family doctor with 3,000 persons on his list—not an unusual number—were to give to each of his patients a 15-minute talk on health each year, it would lengthen his working week by more than 15 hours! It may be assumed that advice on health matters is on much the same lines in Baltimore.

The attendances at infant welfare clinics in Birmingham in 1955 were 169,280, and in Baltimore 80,156, a rising figure. In view of the totally different social and medical conditions in the two countries, the Baltimore attendances are highly creditable to the Health Department.

Probably the most striking difference between the American and British practice, as shown in these two reports, relates to confinements. No fewer than 96 per cent of Baltimore babies were born in hospitals, 98.9 per cent were delivered by physicians, and only 0.9 per cent by midwives. In Birmingham 65.2 per cent were delivered in hospitals and nursing homes and the remainder at home. Further, these figures of institutional births represent an increase of 20 per cent since 1951. Of the mothers delivered at home, 97 per cent were delivered by midwives; though family doctors were in general charge of most of the pregnancies, in most cases they were not present at the actual deliveries. English medical opinion is in general that confinements should when possible be conducted at home. The number of day nurseries in Birmingham has steadily declined since the end of the war and in 1955 there were 28 with 1,266 places. Baltimore had 78 with 2,892 places.

School Health Service

In the realm of school health there are great differences in the matter of attendances of parents at medical examination of their children. In Birmingham a parent was present at 96 per cent of the examinations of entrants, 89 per cent of intermediates, and 56 per cent of "leavers." In Baltimore a parent was present at only 38 per cent of school medical examinations. The figures are not comparable, however, for in Baltimore parents are invited to get their private doctors to fill in the medical examination form and about 50 per cent do so and are not therefore examined in the schools as entrants.

Sanitation

In the matter of sanitation the Baltimore commissioner of health is to be congratulated on his success in securing the passage of the new housing ordinance relating to the provision of bathrooms, which came into operation on January 1, 1956. This ordinance provides that "every dwelling unit shall contain within a room which affords privacy, a bathtub or shower in good working condition which shall be properly connected to both hot and cold water lines and to the public sanitary sewer or to an approved sanitary sewage disposal system."

As a large minority of houses in

Birmingham and other cities in England have no bathroom at all, medical officers of health will be envious of Dr. Huntington Williams, who has secured powers to enforce the provision not only of a bathroom for each house, but a bathroom for each separate tenancy! Most English medical officers of health have been fighting for lesser powers than these for more than a generation—and without success as yet.

Conclusion

It is both difficult and invidious to compare the services in typical American and British cities, for the social, economic, and political backgrounds are so dissimilar. However, a study of the differences in practice is a healthy discipline and can be mutually stimulating. Actually, the Baltimore Public Health Department is the oldest in the United States and much older than any public health department in England. It has been in continuous existence since 1797.

To sum up, it would be fair to say that the health services of both cities compared are administered with enthusiasm, skill, efficiency, and imagination. The Birmingham scheme is possibly more comprehensive and pervasive, because of the social and political background to the municipal services in England. The Baltimore scheme appears to be freer, more imaginative, and less bound by tradition, in spite of its long history. An English reviewer gathers the impression that its health services are forceful, potent, and eager, and that their development under the dynamic leadership of the present commissioner of health will be vivid, rapid, and inspiring.

Useful Information on Poisoning Control

The October issue of "Home Safety Review," a 32-page monthly publication of the National Safety Council, is almost entirely devoted to information on the control of accidental poisoning. It includes articles on the location and distribution of about 90 poison control centers in the United States and Canada, descriptions of a community poisoning prevention project, of a sample training program (Rochester, N. Y.) for public health nurses in safety and poisoning control, and of articles on the treatment and toxicity of household poisons, as well as information on incidence and possible control measures for lead poisoning, poisoning with insecticides and other pesticides and additional information in the general area of the control of accidental poisoning. National Safety Council, 425 N. Michigan Ave., Chicago 11, Ill.; $.25.

ECHO Viruses from Idaho and Montana

RICHARD A. ORMSBEE and E. JOHN BELL

The role of the ECHO viruses in relation to disease is a subject of current interest and research. The authors of this paper have studied the types and distribution of these viruses in Idaho and Montana, where nothing was known about their types and distribution. Furthermore, the viruses were isolated during a poliomyelitis epidemic, and the sample population was obtained around patients as index cases. The findings suggest that illnesses often diagnosed as nonparalytic poliomyelitis may be caused by such ECHO viruses.

The use of monkey kidney tissue cultures recently has revealed the existence of an entirely new, large, and heterogenous group of viruses which can be isolated readily from the human throat or intestinal tract. This group, known as ECHO viruses (enteric cytopathogenic human orphan), is composed of many antigenically distinct types.[1] Fifteen antigenic prototypes have been recognized.[1, 2, 6] They are not antigenically related to any of the known disease-producing viruses which also can be isolated from the human alimentary tract.

Members of the ECHO group have been isolated from stools of healthy children, and less frequently adults, in different parts of the world.[3-6] They also have been recovered from patients with lower motor neuron paralysis and aseptic meningitis.[7-13] Their actual relationship to disease is largely unknown (hence the original term "orphan" virus) and is a subject of current research.

In the course of poliomyelitis surveillance studies in Idaho and western Montana that followed the initial use of Salk vaccine in the spring of 1955, 32 strains of ECHO virus were isolated from stool samples taken from individuals suffering from disease resembling poliomyelitis or from immediate family contacts of such patients. These virus strains were investigated for two reasons. First, nothing was known about the types and distribution of ECHO viruses in this particular geographic area. Second, the ECHO virus isolations were made during a poliomyelitis epidemic and the population sampling was oriented around poliomyelitis patients as index cases. Thus, this study differs from most previously published studies in which ECHO virus strains were isolated from healthy people during interepidemic periods of poliomyelitis or from patients during epidemics in which poliovirus was not a conspicuous factor. Extensive poliomyelitis surveillance was carried out in Idaho and Montana beginning late in April, 1955. The first ECHO virus was isolated from a stool collected on the following August 7, and all subsequent ECHO virus isolations, except one, were made during the period of August 7, to October 2, 1955. Stools collected during this period from 216 individuals were included in this study.

This report describes the results of virus neutralization tests with these 32 viruses, their growth in primate tissue cultures of three different cell types, and their epidemiologic relationships.

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Material and Methods

Viruses—Isolation was accomplished by inoculation of stool extracts into rhesus monkey kidney tissue cultures.[14] The viruses were categorized as ECHO viruses according to the criteria suggested by the Committee on the ECHO Viruses.[1] Thus, they were not neutralized by pooled antiserums for the three types of poliovirus; they were not pathogenic in day-old mice nor were they neutralized in tissue culture by antiserums against six Coxsackie types (B1–B5 and A9), which cause cytopathogenic effects in monkey kidney tissue culture; and they did not produce cytopathic changes characteristic of the adenovirus[15] group in monkey kidney cell cultures or fix complement in tests with adenovirus antisera.

Each isolate was mass cultured in bottle cultures of monkey kidney cells, titrated, and stored at –60° C in sealed glass ampules until used.

Sera—ECHO type-specific rabbit antisera used in the neutralization tests were prepared as previously described.[6] Gamma globulin pools, representing pools of donors from three different geographic areas of the United States, were procured from commercial sources. Patients' sera taken in the field were held at –35° C until used.

Cells—Rhesus monkey kidney cells were used in all neutralization tests. They were prepared and grown by methods already thoroughly described[6, 16] and maintained on MS[17] plus 5 per cent calf serum or on a medium consisting of 0.5 per cent lactalbumin hydrolysate in Earle's salt solution plus 5 per cent calf serum.

HeLa cells[18] were grown on a medium consisting of 40 per cent human serum in Hanks's solution and Maben cells[19] on medium 199[20] containing 20 per cent human serum. Before inoculation with virus, cultures of these cells were washed three times with Hank's solution and subsequently maintained on a mixture of 5 per cent calf serum, 5 per cent chicken serum, and 90 per cent MS.

Neutralization Tests—All neutralization tests were performed in rhesus kidney cell cultures with 100 TCD_{50} of virus as measured by tissue culture titration and calculation of the end point by the Reed and Muench method.[21] As previously described,[6] neutralization tests to determine antigenic type were performed by mixing virus suspension with an equal volume of antiserum containing 20 units[1] of antibody. Following one hour of incubation at 37° C, 0.2 ml aliquots of the serum-virus mixture were added to tubes of monkey kidney cultures. These preparations were incubated at 37° C for seven to nine days, during which time they were periodically examined. Control virus titrations were carried out simultaneously. Neutralization tests with patients' sera and with three pools of gamma globulin were carried out similarly, except that serum or gamma globulin dilutions of 1:5, 1:25, and 1:125 were used. In monkey kidney cultures 1:5 dilutions of gamma globulin often caused a nonspecific toxic reaction which was not encountered at dilutions of 1:25. Different criteria were employed in reading the two neutralization tests. Complete inhibition of cytopathogenesis by antiserum was the criterion in the typing tests, whereas marked inhibition of cytopathogenesis, but not necessarily complete inhibition, was regarded as indicative of the presence of specific antibodies in gamma globulin and patients' sera.

Results

Neutralization Typing Tests—Of the 32 ECHO virus isolates, 24 were identified by neutralization tests with antisera against 15 ECHO virus prototypes. One was ECHO–3, 12 were ECHO–4, 11

were ECHO–14, and eight were not typable. These findings are in contrast to studies of healthy populations [3, 6] in which a larger variety of identified ECHO virus types was found. ECHO virus was reisolated from each original stool extract to confirm the initial isolation. On the assumption that some of the eight untypable viruses might consist of mixtures of two known ECHO types, neutralization tests were performed with a pool of antisera containing antibodies against 14 ECHO prototypes. None of the eight untypable strains were neutralized by this antiserum pool.

Growth in Primate Cells—The growth rates of the 32 ECHO viruses were, with one exception, moderate, i.e., the virus titration end point in monkey kidney tissue cultures was reached in from five to six days. The exception was an untypable ECHO which reached an end point in from seven to nine days. The average titer for ECHO-4 strains in monkey kidney cultures was $10^{5.0}$, for ECHO –14 strains $10^{4.8}$, for the one ECHO–3 strain $10^{4.7}$, and for the untypable strains $10^{4.5}$.

ECHO virus prototypes 4 and 14 would not grow on either HeLa or Maben cells according to a previous report.[6] These findings were confirmed in the present study. Likewise, none of the newly isolated ECHO–4 or ECHO –14 strains produced specific cytopathic effects in these cells when inoculated in 100 TCD_{50} amounts. With the exception of one ECHO–14 strain which produced a titer of $10^{3.3}$ in cultures of Maben cells, virus growth was not detected by titration of the supernates in monkey kidney cell cultures.

Epidemiology — The incidence of ECHO virus infections by age group (Table 1) shows a broad distribution extending into the age group of 25 years and over. The rate of ECHO virus recoveries, in contrast to that found by Ramos-Alvarez and Sabin,[3] remained essentially constant for the five age groups of individuals from one to 24 years of age.

ECHO viruses were widely distributed in the area studied. Thus, our 32 ECHO isolates were recovered from members of 25 households from which 48 persons were tested. In 18 of these households, only a single member was tested. Each of the remaining seven households contributed from three to six members. In three of these families, virus was recovered from five of six, three of six, and two of three members, respectively. With one exception, no more than a single type of virus was

Table 1—The Distribution of Idaho-Montana ECHO Virus Isolations by Age Group

Age Group	Number of Individuals Tested	ECHO Virus Type				Total	Per cent Incidence
		E3	E4	E14	X [1]		
0– 4	51	1	4	1	1	7	13.7
5– 9	49	0	2	3	2	7	14.3
10–14	27	0	3	4	2	9	33.2
15–19	12	0	1	1	0	2	16.7
20–24	10	0	1	1	0	2	20.0
25 and over	48	0	1	1	0	2	4.2
Unknown	19	0	0	0	3	3	15.8
Total	216	1	12	11	8	32	14.8

[1] Untypable ECHO strains.

isolated from a given family. In the exception, an untypable virus and an ECHO–4 virus were isolated from the same family, though from different individuals. Since repeated sampling of each household was not done, reliable data concerning spread of these ECHO viruses within families were not obtained.

In terms of distribution by ECHO type, ECHO–4 was isolated from eight families (12 isolations), ECHO–14 from 10 families (11 isolations), and untypable ECHO virus from seven families (eight isolations). ECHO–3 was isolated just once.

Distribution of ECHO types by diagnosis and locality was as follows:

	ECHO Types							
	Idaho				Montana			
Diagnosis	3	4	14	X*	3	4	14	X
Paralytic	0	2	2	0	0	0	3	0
Nonparalytic	1	4	2	4	0	1	3	1
Healthy contact	0	5	1	3	0	0	0	0
Totals	1	11	5	7	0	1	6	1

* Untypable.

Work of other investigators [10-13, 22-24] has strongly suggested that certain ECHO virus types may cause illness clinically similar to nonparalytic poliomyelitis. Therefore, available data were examined from this viewpoint. The 216 individuals comprising the original Idaho and Montana study were grouped according to three categories: paralytic, nonparalytic, and healthy contacts of the first two groups. The incidence of ECHO virus isolations among these groups was then compared.

The distribution of specimens and virus isolations grouped according to the time after onset of illness when specimens were collected from the 122 patients comprising the first two groups is given in Table 2. A single stool specimen was obtained from each patient. ECHO virus was recovered from 20 of 93 (22 per cent) specimens collected within three weeks after onset of the patient's illness and from one of 17 specimens (6 per cent) taken between the third and 19th week after onset. Collection dates for the remaining 12 specimens from which two ECHO viruses were recovered were unknown. Thus, most of the 23 ECHO viruses were recovered early in the course of illness. The significance of the observation is lessened, however, by the small number of specimens collected later than three weeks after onset.

Stools from 93 of the 122 patients represented in Table 2 were collected within three weeks of onset of illness. Since it is more likely that virus isolated during this period was relevant to the patient's disease, the incidence of ECHO virus and poliovirus isolations from this group of 93 is compared with the incidence of virus recovery from the stools of 94 healthy contacts in Table 3.

In the Idaho study, the incidence of ECHO virus in the nonparalytic group was high (50 per cent), whereas in the paralytic and healthy contact groups it was low (7 per cent and 11 per cent, respectively). Of 20 persons classed as nonparalytic, ten yielded ECHO virus only, and four poliovirus only. Further examination by serologic tests of this group, as well as of the other groups,

Table 2—The Distribution of Virus Isolations According to the Time After Onset of Illness

Clinical Diagnosis	Virus Isolated	Idaho Weeks After Onset				Montana Weeks After Onset			
		3	3–19	Unknown	Total	3	3–19	Unknown	Total
Paralytic	Polio	18	2	1	21	12	2	2	16
	Coxsackie	1	0	0	1	0	0	0	0
	ECHO	2	1	1	4	3	0	0	3
	None	7	8	4	19	5	0	0	5
Nonparalytic	Polio	4	0	0	4	7	0	1	8
	ECHO	10	0	1	11	5	0	0	5
	None	6	2	1	9	13	2	1	16
	Total	48	13	8	69	45	4	4	53

was not possible since very few paired sera were available, and those specimens which were submitted had been taken, in most cases, early in the course of disease. Of 28 paralytic patients, two harbored ECHO virus only, 18 poliovirus only, and one harbored Coxsackie A–9 virus. In the healthy contact group, nine ECHO viruses were recovered. Of 81 persons in this group, 56 were contacts of paralytic patients and 25 of nonparalytic. Such analysis of the healthy contact group was not revealing, since the same proportion of virus isolations was obtained from each subdivision. Even this fact had little meaning since four isolations (all ECHO–4) were from members of one family and two (ECHO–14) from members of a second family.

In contrast to results of the Idaho study, the Montana study failed to show any great difference in the incidence of ECHO virus isolations from the paralytic poliomyelitis group (15 per cent) and the nonparalytic group (20 per cent). No virus was recovered from the small group of healthy contacts. As in the Idaho study, a more complete investigation by serologic tests was precluded by absence of necessary serum specimens.

On the basis of our data no definite reason can be assigned to the difference

Table 3—The Incidence of Virus Isolations from Stools Collected Within Three Weeks of Onset of Illness

Clinical Group	Idaho			Montana		
	Number Tested	ECHO	Polio	Number Tested	ECHO	Polio
Paralytic	28	7% (2) [1]	64% (18)	20	15% (3) [4]	60% (12)
Nonparalytic	20	50% (10) [2]	20% (4)	25	20% (5) [5]	28% (7)
Healthy Contacts *	81	11% (9) [3]	25% (20)	13	0	8% (1)

* The majority of these also were collected within three weeks of onset of illness in the index patients.
[1] 1 ECHO–4, 1 ECHO–14.
[2] 1 ECHO–3, 4 ECHO–4, 2 ECHO–14, 3 untypable.
[3] 5 ECHO–4, 1 ECHO–14, 3 untypable.
[4] All ECHO–14.
[5] 1 ECHO–4, 3 ECHO–14, 1 untypable.

between the Idaho and Montana groups with respect to the incidence of ECHO isolations from the paralytic and nonparalytic patients. The poliomyelitis epidemics in progress in the two states clearly differed. The Idaho epidemic,[25] whose beginning was coincident with the initial use of poliomyelitis vaccine in April, 1955, was caused primarily by Type I poliovirus (over 90 per cent). The poliovirus isolations from the Montana epidemic,[26] which began in July, 1955, were over 96 per cent Type III virus. It should be emphasized also that the data presented herein were obtained through participation in a large-scale poliomyelitis surveillance program. The numerous physicians involved in making diagnoses and in the collection and shipment of specimens and the large distance between the patient and the laboratory are some of the more obvious factors making conditions far from ideal for this type of analysis.

Of 11 convalescent serum specimens available from virus donors, four had detectable antibody to the homologous virus. In three cases associated with ECHO–4, the sera of two taken 38 and 361 days, respectively, after onset of illness showed neutralizing antibodies in low titer, while that of the third case, taken on the 392nd day, had no detectable antibodies. Of five cases associated with ECHO–14, the serum of one taken the 71st day after onset possessed a neutralization titer of 1:125, while the sera of the remaining four persons taken from the 15th to the 634th days after onset yielded negative results. In single cases from which ECHO–3 and an untypable ECHO virus were isolated, respectively, the sera taken on the 25th day gave negative results. In one case from which an untypable ECHO was isolated, and for which paired sera were available, a rise in neutralizing antibody from 0 to 1:25 was obtained by the 32nd day.

Table 4—Neutralization Tests with 32 Idaho-Montana ECHO Viruses and Three Commercially Prepared Lots of Gamma Globulin

ECHO Type	Number of Strains	Gamma Globulin Neutralization Titer
3	1	$< 1:25$
4	12	$< 1:25$
14	11	$1:25$ to $\leq 1:125$
Untypable	6	$1:25$ to $\leq 1:125$
Untypable	2	$< 1:25$

Three different pools of gamma globulin were tested for neutralizing antibodies against all 32 ECHO viruses (Table 4). ECHO–4 strains were not neutralized by gamma globulin at a dilution of 1:25 or higher, whereas ECHO–14 strains and six of the eight untypable strains were so neutralized. Neutralization tests with ECHO–4 and ECHO–14 prototype virus gave corresponding results. However, when a 1:5 dilution of gamma globulin was employed, neutralization of ECHO–4 prototype virus as well as of the newly isolated ECHO–4 strains was observed. These latter results were difficult to interpret, since gamma globulin at this concentration was toxic to normal control tissue cultures of monkey kidney cells.

Discussion

The virtual restriction of identified ECHO virus to types 4 and 14 was worthy of note considering the wide geographical area sampled, and the fact that the 32 ECHO isolates came from members of 25 different households. The Idaho strains came from widely distributed areas in the southern half of the state. Those from Montana came from the western half of the state, including a region from the Wyoming–Idaho border almost to the Canadian border. Studies of patients in epidemics characterized by the aseptic

meningitis syndrome have often revealed the presence of a restricted number of ECHO virus types.[11–13, 22–24] A wider variety of antigenic types has been found among healthy populations in other areas. Thus, the sampling of healthy children in the Midwest and in Mexico by Ramos-Alvarez and Sabin [3] revealed the presence of five ECHO types. Routine sampling of healthy children in Charleston, W. Va.,[6] indicated the presence of at least eight antigenic types.

The age distribution of ECHO virus donors found in this study is noteworthy in that isolations were made from all age groups, as well as for the fact that the isolation rate found did not decrease in the five-year age groups up to 24 years of age. This is in contrast to observations of Ramos-Alvarez and Sabin [3] who found that the isolation rate of ECHO viruses from healthy children dropped off sharply with increasing age. Thus in a study of children in the Cincinnati region, the isolation rate was 5.2 per cent in the group aged one to four years, 2.6 per cent in the group aged five to nine years, 0.2 per cent in the group aged 10 to 14 years, and none was recovered from adolescents aged 15 to 17 years. The over-all rate of recovery of ECHO viruses in the Idaho-Montana group (14.0 per cent) is much higher than that found by Ramos-Alvarez and Sabin [3] in the Cincinnati area (1.6 per cent) and is comparable to that found in Mexico City (15.6 per cent) and Veracruz (10.0 per cent) in children up to four years of age. Neither ECHO–4 nor ECHO–14 was isolated from normal children in Cincinnati in the study conducted by Ramos-Alvarez and Sabin. The presence of these ECHO types in the Idaho-Montana group may account for the higher incidence of ECHO virus isolations in this study as compared with those found elsewhere.

Certainly the data presented in this report are insufficient to demonstrate an etiologic relationship between ECHO viruses and disease. Nevertheless a majority of our isolations were from stools of patients with a diagnosis of paralytic or nonparalytic poliomyelitis. Of 32 isolations of ECHO virus, 23 were from persons with paralytic or nonparalytic disease, and only nine from healthy family contacts. Of these nine, four came from one family. The association of ECHO virus with illness is particularly striking in the Idaho "nonparalytic poliomyelitis" group, since ECHO virus was recovered from approximately 50 per cent of such individuals whose illness occurred in the two-month period during which all ECHO infections but one were found. This finding is consistent with observations of others which suggest that some ECHO viruses may cause illnesses often diagnosed as nonparalytic poliomyelitis. Thus, Godenne and Riodan [27] isolated unidentified (ECHO) virus from patients with aseptic meningitis (including nonparalytic poliomyelitis) or "encephalitis." Duncan, et al.[28] also have isolated unidentified cytopathogenic viruses from patients with aseptic meningitis. Davis and Melnick [24] have succeeeded in isolating ECHO–6 from 21 persons with "nonparalytic poliomyelitis." Antibody rises to ECHO–6 were noted and the total picture strongly suggests that ECHO–6 is an etiologic agent of aseptic meningitis. Similar findings with ECHO –6 have been reported by Enders.[29] ECHO–6 has also been implicated as the etiologic agent in outbreaks of aseptic meningitis by Karzon, et al.[22] in New York State, Kibrick, et al.[11] in Massachusetts, and in isolated and widely separated cases of aseptic menningitis in the United States by Meyer, et al.[13] ECHO–9 has been implicated in two epidemics in England by McLean and Melnick,[23] and by Quersin-Thiry, et al.[12] in Western Europe.

In the present study, convalescent sera from 11 ECHO virus donors

were available for serologic tests. Sera from four of these 11 donors had neutralizing antibodies in low titer 15 to 70 days following onset of illness. Either type 4, 14, or an untypable ECHO virus had been recovered from these four persons.

Three lots of gamma globulin obtained from three commercial firms failed to neutralize the 12 ECHO–4 viruses recovered in the present study. On the other hand, the 11 ECHO–14 isolates were neutralized by each of the three pools of gamma globulin. Such results may reflect a difference between these two ECHO-virus-types in regard to their pathogenicity, capacity to stimulate antibody, or, possibly, their prevalence in the general population. The difficulty noted in our hands of preparing pools of high-titered rabbit antisera against ECHO–4 virus strains suggests that many type-4 viruses may be weakly antigenic.

The results both with patients' sera and with gamma globulin may indicate that the sensitivity of the tube neutralization test left something to be desired. Melnick [30] found that sera containing antibodies against ECHO–4 or ECHO –14 may show low titers when measured by the tube neutralization test, but high titers when the plaque neutralization test is used. Hence, the use of the latter technic might have shown the presence of specific antibodies, both in patients' sera and in gamma globulin preparations, which were not demonstrated by the tube neutralization method.

Summary

Thirty-two ECHO viruses were isolated from specimens collected from August 7 to October 2, 1955, from 216 poliomyelitis patients or their contacts living in southern Idaho and western Montana. Twelve were identified as ECHO–4, 11 as ECHO–14, one as ECHO–3, and eight as untypable strains. With one exception, the ECHO–4 and ECHO–14 strains did not multiply nor produce cytopathic effects in cultures of HeLa or Maben cells, whereas all isolates multiplied in monkey kidney cells to give titers averaging $10^{5.0}$ and $10^{4.8}$, respectively.

The incidence of ECHO virus isolation ranged from 13.7 per cent in the 0- to 4-year-old group of donors to 4.2 per cent in those 25 years of age or over, with a peak incidence of 33.2 per cent in the 10- to 14-year-old group and an average incidence of 14.8 per cent.

Virus neutralization attempts with three pools of gamma globulin resulted in little or no neutralization of the ECHO–4 strains, but strong neutralization of the ECHO–14 strains.

ECHO virus infections were considerably more prevalent among clinically diagnosed poliomyelitis patients than in a comparable group of healthy contacts of such cases. A remarkably high incidence (50 per cent) of ECHO virus infections was found in the group of Idaho patients diagnosed as having "nonparalytic poliomyelitis." The incidence of ECHO virus infections in the Idaho group of "paralytic poliomyelitis" patients (7 per cent) was not significantly different from that found in healthy contacts of poliomyelitis patients (11 per cent).

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Contract Public Health Services for Rural Counties—A New Approach to an Old Problem

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One promising answer to the generally unsolved problem of bringing adequate public health services to rural areas is outlined in provocative detail here.

How can even minimal public health services be provided in sparsely populated rural areas with very limited tax resources? Public health workers have been struggling to find a solution to this problem even before the days of Dr. Harry Mustard's efforts to create rural health departments in the southern states with a basic team of medical health officer, public health nurse, sanitarian, and clerk. Multicounty units, state districts, liberal federal and state subventions to local governments—all have been tried with varying degrees of success or failure. In California we have recently developed a new, or at least, different, approach to this problem. It is still in the experimental stage, but it seems to avoid some of the disadvantages of previous efforts at solution.

While the problem is not confined to any one state or section of the nation, it has been particularly acute in California, and other western states, since large parts of some thinly populated counties are owned by state and federal governments and are not subject to local taxation. The already low assessable valuation for tax purposes is further lowered. In some California counties this government-owned property amounts to over 70 per cent of the total county area.

The problem of providing public health services in these areas has grown even more difficult in recent years. Higher salaries and a continuing critical shortage of qualified personnel have increased the per capita cost of public health programs and the administrative "headaches" connected with them. With the growing cost of all governmental activities and services, it is not hard to understand that local governing bodies in these large areas with a few residents are reluctant to embark independently on a new public service.

As the problem of financial support grew more difficult, the need for public health protection became more urgent. These parts of California contain some of the state's most scenic mountains, forests, lakes and streams, and the number of tourists and recreation-seekers visiting them has increased to amazing proportions. Not only the health of the small resident population, but of the thousands of visitors, must be protected. This large temporary population used to be mainly a summer public health problem, but with the increasing poularity of winter sports, for which many of these mountain counties are ideally suited, it has become a year-round matter. The throngs of recreation-seekers inevitably have increased the already serious sanitary problems of the areas, and make the lack of safe water supplies and adequate sewage and waste

disposal even more acute and dangerous. Repeated localized outbreaks of gastrointestinal diseases in several resort areas have pointed up the hazard.

Throughout the 86 years of its history, the California State Department of Public Health has tried to promote the formation of local health departments, but since 1937 we have intensified our efforts by various means; first through federal grants-in-aid, later through a state subvention, and through working with interested community groups and local governing bodies in programs of community health education. These means were successful enough so that by 1953 almost every locality with sufficient population and financial resources had organized local public health services, but there were still 15 counties in California with a total population of around 200,000 without any organized local public health protection and without much prospect of obtaining it through purely local efforts. These 15 counties cover about 30 per cent of the total area of California and in them are some of our most popular recreation spots. There was no consolation in the fact that the resident population of these counties represented less than 2 per cent of the total population of the state since most of these counties had temporary populations on week ends and holidays many, many times greater than their resident population.

None of these counties could qualify for state subsidy under the provisions of California's Public Health Assistance Act of 1947 unless they established their own local health departments, and it was obvious that, in most instances, they were actually unable to do this. (State statutes require each county and incorporated city in California to have a duly appointed health officer, but do not require specifically that the local governing bodies create a health department.) By 1953 it became apparent to the department's Division of Local Health Service that no existing plan actually met the needs and the financial capabilities of the majority of the 15 rural counties of California still without public health departments.

The first approach to a new method of solution was an effort by the state staff, through meetings with regional county supervisors associations and individual boards of supervisors, to make them aware of the seriousness of the problem and the need for some positive action, both from the standpoint of the economic effect on their desirability as a recreational and resort area, and from the potential danger to the health of resident population. But, again, the economics of the situation presented an almost insurmountable barrier which few, if any, local governing bodies wanted to try to hurdle. One or two counties did employ a resident sanitarian, but this approach was soon recognized as inadequate.

Surveys of Rural County Health Needs

At the same time, and with the approval of both state and regional associations of county supervisors, the State Department of Public Health embarked on a series of surveys of a few typical rural counties in Northern California. One was of a county in the Sacramento Valley, a strictly agricultural county; another was of a county in the mountains in the famous Mother Lode region; and a third was of a mountain county in the Northern Coast Range with geographic and topographical features posing special problems. Each survey was conducted by a team of state consultants with the assistance of interested community groups and individuals. The aim was not only to

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define the public health problems and needs of the county in terms of the information which the State Department of Public Health already had and which the survey team might uncover, but also to find out from a representative cross-section of the community what they thought or felt their problems and needs were. This proved to be a very enlightening and informative approach and gave us a basis for analyzing the situation realistically. We obtained a truer picture of the attitude of these people toward their problems and of the situation as it affected their lives and interests. It also had a desirable corollary result of stimulating a rather wide interest in local public health, where there had been general apathy and lack of interest before.

Results of the Surveys

What was brought out by the surveys and other studies of these counties? Probably the most striking thing was the recognition that neither the local community nor the State Department of Public Health knew very much about what the public health problems really were in these areas. Everyone had impressions and opinions but little definite knowledge. We did know what people died from, or at least what their death certificates, unchecked by any local health authorities, stated they died from. We did not know with any accuracy how much tuberculosis there really is; how many unrecognized and undiagnosed cases are at large in these communities. We do know that in many parts of this area there is a fairly high incidence of gastrointestinal diseases, and that deaths from diarrheal diseases contribute to infant mortality. Statistical information regarding disease incidence and prevalence was woefully incomplete and woefully inaccurate. Only in the field of sanitation did we have very firm bases for either conclusions or recommendations.

After these surveys we entered into a series of discussions with the staff of the Health and Hospital Committee of the state-wide County Supervisors Association of California, and with the two regional supervisors associations in whose areas were located practically all the counties lacking organized public health services at that time. We were fortunate in that for a number of years we had worked closely and cooperatively with the California Association of County Supervisors, with its Health and Hospital Committee, and also with the Northern California Supervisors Association, one of the regional associations involved. As a result of many friendly discussions with these groups we were able to define the problems and the needs of these areas in a realistic way, not only as we saw them but as the responsible representatives of local government saw them.

Needed Legislation Developed

Gradually a new plan began to take shape for providing basic public health services to these areas. It seemed to be a feasible and practical plan, acceptable to the local governing bodies, the communities, and to the State Department of Public Health, but it would require action by the State Legislature. The necessary enabling legislation was developed by close cooperation of the California Association of County Supervisors and the Northern California Supervisors Association with the State Department of Public Health. Not only the basic legislation, but the philosophy behind it and the general concepts regarding the type of program to be developed, were discussed in detail with the Health and Welfare Committee and the Board of Directors of the Northern California Supervisors Association. The ideas of the consumers of the proposed services as well as that of the purveyors

went into the development of the program. Time has proved the soundness of this approach, for an atmosphere of mutual respect and understanding was created which has been one of the main sources of the strength of the program.

An additional section to the Public Health Assistance Act was then proposed which would enable a county with a population of less than 40,000 to contract with the State Department of Public Health to organize and operate a local public health service in such county. The 1953 Legislature passed the proposed addition and Section 1157 was added to the California Health and Safety Code.*

Joint State-Local Services vs. State District

We believe that the program which we have set up under this permissive legislation differs significantly in both its philosophy and its operation from the ordinary state district type of local public health service. The California State Department of Public Health does not view the typical "state district" as a desirable solution to this problem in California. (It tried the district method for two years in 1917 and 1918 and abandoned it.) County governing bodies have never looked with favor at suggestions of a district plan and probably would have vigorously opposed such a program if it had again been seriously proposed. Not only the governing bodies but the people themselves would probably have been resistant to anything that smacked of "meddlesome bureaucracy" imposed from the state level. It was plain that if the State Department of Public Health were to participate in the provision of any kind of public health services in these areas it would have to be as a partner of local government, and the people would have to feel that the program was their own program. It is this basic philosophy that has shaped the legislation and the entire new program.

It might seem that the self-sufficiency characteristic of people in remote rural areas would not be conducive to the team work necessary for this joint effort, but it has been a continuing source of gratification to the state personnel taking part in the program to see how well the people of these areas can and do work together with an interest and enthusiasm that might well be envied by the most "organized" urban communities. While advisory boards of health are permitted by the new statute, they are not mandatory and neither the department nor any of the local governing bodies have felt need for them thus far in the program. In effect, each entire community serves as an advisory board through the medical profession, the voluntary agencies and other community organizations, because the pro-

* Section 1157. "In lieu of any other provisions of this chapter, upon request of the board of supervisors of any county of less than 40,000 population and upon the appropriation for public health purposes by such county of a sum of not less than fifty-five cents ($0.55) per capita for the total county population, the State Department of Public Health may organize and operate a local public health service in such county. The State Department of Public Health may conduct such local public health service either directly, or by contract with other agencies, or by some combination of these methods as may be agreed upon by the State Department of Public Health and the board of supervisors of the county concerned. The creation of a county board of public health or a similar local advisory group shall be at the discretion of the board of supervisors. The state financial assistance which is appropriated for public health services in counties which have not qualified or do not elect to quality for such funds under other provisions of this chapter, is hereby made available to the State Department of Public Health for such purposes. Funds expended pursuant to this section shall be in accordance with law regarding expenditures of money appropriated out of the State Treasury, including those in the Budget Act and any applicable provisions of the Government Code."

gram is close to the people it seeks to serve. However, if multicounty units are devolped in the future an advisory board may play a necessary and important role.

Individualized Contracts

One of the criticisms most frequently made of the provision of public health services by one jurisdiction to another under a contractual arrangement is that the jurisdiction contracting for the services has no continuing voice in the administration of such services and as a result soon loses all feeling of responsibility and concern for this essential governmental function. Usually all that the governing body can do, if it is dissatisfied with the public health services it is receiving, is to abrogate the contract and provide its own services.

From the very beginning of this program, in fact in the development of the legislation itself, we have sought to avoid this pitfall. In the first place, there is no standard contract. An individualized contract is entered into with each separate board of supervisors. Each contract is drawn up in final form only after full discussions with the board and those the board desires to bring into the negotiations, such as the local physicians, the local part-time health officer, the district attorney, and the county school superintendent. The contract seeks to embody the ideas and wishes of the board of supervisors and of the community as to their public health problems and needs and the program priorities and emphasis which they believe are needed to meet them. The county, therefore, through its governing body and its representative, the local health officer, is an active partner with the state.

Monthly activity reports are submitted by the department to each contracting board to keep it in close touch. No change in program or addition to it is made without consulting the board of supervisors. The board, in turn, is entitled to suggest at any time changes in the services as they are being rendered under the contract. We believe that in this way we have avoided the major objection to the rendering of local public health services by contracting with another agency.

Individualized Programs

Just as there is no standard contract, so there is no stereotyped program. In all these rural areas the most obvious need is for sanitation services. Public health nursing services are also a basic need. Control of communicable disease, maternal and child health programs, case-finding and contact-tracing in tuberculosis, case-finding for the crippled children's program, health education, and public health laboratory services are all required with varying degrees of emphasis, depending on the needs of the individual counties. Immunization programs are carried on in all the counties, and school health services in each case have been developed with the assent and cooperation of the school officials concerned. Local needs have been determined by actual public health survey in one county, and in others by information available to us from local sources and from our own department bureaus and services.

Local Organization

Typically, the local staff consists of a part-time health officer, a clerk, and one or more nurses and sanitarians. The usual arrangement is that local funds are used for the salaries of the part-time health officer and the clerk, for the provision of office quarters and the purchase of supplies, while the state employs nurses and sanitarians and assigns them to the local department. The locally assigned state personnel live in

the areas in which they work and receive their day-to-day instructions from the local health officer. Public health laboratory services are provided directly by the Division of Laboratories of the State Department at the main laboratories in Berkeley.

State Organization

The administration of the program, both at the state and local level, is the responsibility of the chief of contract services in the Division of Local Health Service of the State Department of Public Health. Local programs are planned by him and his staff with the appropriate department bureau and service chief, and with the local community. All the consultative and advisory resources of the State Department of Public Health normally available to the organized local health departments of the state are available both to the central office of the contract services and to the local programs.

The central office in the State Department of Public Health consists of a medical chief of contract services, a medical officer and a director of sanitation, with the necessary clerical staff. Nursing supervision has been given by the department's Bureau of Public Health Nursing through its regional consultants, but in the coming fiscal year we are asking for a full-time position of director of public health nursing services. We are also asking for a full-time health educator to work in the areas under contract. This service is presently being carried on by the field health education consultants of the department's Bureau of Health Education and requires the equivalent services of a full-time educator.

Development of a Contract Service

In developing a contract service we make no effort to organize or stimulate the formation of community groups. We have learned from observation and experience that local governing bodies and communities usually resent the organization by "outsiders" of what they consider pressure groups. We have, therefore, left this type of activity to the voluntary agencies and unofficial organizations which can operate through their local units. Where interested citizen groups have been formed, or where existing groups have taken an active interest in developing a local public health program in this pattern, the impetus has come from the community itself, with the state staff available only in the role of resource personnel to enable the community to study itself and evaluate its own problems and needs.

The only official action that the State Department of Public Health takes is to notify counties without organized local public health services that it is necessary for any county interested in entering into a contract in the particular fiscal year under consideration, to indicate their intent in time for the needed state financing to be included in the special subvention item of the department budget under which this program is operated. We have tried to begin the work where the local need and interest is greatest, and have found this to be a very productive method of approach. In this we have been most appreciative of the help given by the local physicians, local boards of supervisors, and other county officials.

Nine Counties Under Contract

Under this new policy, which we still must honestly call an experiment, there are now nine rural counties receiving their public health services under contract from the State Department of Public Health. The total population of these nine counties is only a little over 70,000, but the area is almost 20,000 square miles. (Contrast this with Los Angeles County's five mil-

lion people in a little over 4,000 square miles!) Six counties of this type with a total population of 93,000, still remain without any local public health services. California's resident population now left without organized public health protection has been reduced to less than 0.7 per cent of the total.

Tentative Evaluation

It is still too early to clearly evaluate the program, either in terms of continuing acceptance or of the quality and quantity of the services and how well these meet the real public health problems and needs of the communities being served. The critical shortage of adequately trained and qualified public health personnel, which plagues practically every public health department, is at present the most obvious difficulty we have to face. At best, these are rugged jobs, most of them in isolated and remote areas of the state. They not only call for better-than-average competence, but for a person with true pioneering spirit, who can fit comfortably and happily into this environment and can derive satisfaction from using the initiative and imagination these positions demand.

We do feel that the program has already demonstrated significant strengths in the ready acceptance and the local support beyond what is called for by the statute itself or by the contractual agreements which implement it. We firmly believe that these strengths stem from the concept that this is not a "state" program arbitrarily imposed on a community, but a joint, cooperative effort by the state and the local jurisdictions, mutually agreed upon by them, in which both parties to the contract take a continuing interest and assume a shared responsibility for its success. It is this pattern which we feel constitutes a new and desirable method for furnishing acceptable, realistic and increasingly adequate local public health services in those areas of the country where they have not been available or practicable under previous circumstances.

Professional Employment Service

The U. S. Department of Labor in an effort to help meet the serious shortage of professional and managerial personnel has established employment offices for professional and managerial personnel. A total of 67 specialty designated and qualified local-state offices has been established throughout the country. Requests for workers or for jobs that cannot be filled by the local-state employment office will be transmitted to the other employment centers for professional personnel.

A Study of Periodic School Medical Examinations

III. The Remediability of Certain Categories of "Defects"

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When is a defect not a defect? In endeavoring to answer this question the authors point the way to a more efficient and effective employment of personnel in the school health program. But beyond this lie still other implications—specifically the need for a continuous re-thinking of the basic logic of our activities.

The initial impulse leading to the creation of school medical services in the United States developed in the late nineteenth and early twentieth centuries from attempts to control communicable disease among children by early detection and isolation. However, the major impetus to their development as they exist today arose in the second and third decades of the present century as an element in the American child health movement. The overriding objective was the early discovery and correction of "defects." As this period coincided with the popularity of such procedures as tonsillectomy, large numbers of "defects" could be readily "found" by cursory inspection and "corrected" by assembly line surgery.

The concept of early case finding in school and early correction of defects so as to prevent future disability is an appealing one. After World War I the American public, shocked by the proportion of young men rejected for military duty, looked to the newly developing school medical services as a solution to the situation. When Selective Service statistics during World War II again disclosed a high proportion of rejectees an accusing finger was pointed at the school health services. One review of school records disclosed that a high proportion of some of the reasons for rejection had been recognized in the elementary school.[1] The school medical services were taxed with placing too much emphasis on finding defects and not enough on correcting them. Legislation was introduced into Congress providing for a comprehensive program of treatment for school-discovered defects.[2] A few voices protested that most of the rejections were for educational and mental deficiency, psychiatric disability, dental and eye defects, or other conditions for whose continued existence the school medical services could hardly be held responsible.[3] Yet even today such protestations are often unheeded. Draft rejection statistics are still quoted as support for new programs or appropriations.[4] Furthermore, many school health service reports continue to list the number of "defects found" and "defects corrected." Even when "correction is defined as "a note from a private physi-

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cian," the implication that correction and medical care are synonymous is hard to escape. In point of fact, the criticism that periodic school medical examinations keep finding the same old "defects" year after year may arise as much from the inherent nature of the "defects found" as from failure of follow-up activities.

In previous communications we have questioned the case-finding value of periodic school medical examinations during the first four elementary school grades.[5, 6] We have described the annual incidence of new "defects" and pointed out that by the time an examination is performed the vast majority of conditions are already under care or known to the school or inherently capable of discovery by some method other than a complete medical examination. In this report attention will be focused on the nature of the adverse conditions or "defects" found among elementary school children, their response to medical care, the degree to which they are handicapping, their inherent remediability, and the relationship of these characteristics to the periodic school medical examination.

The data presented below are based upon careful pediatric appraisals of a 15 per cent sample of Rochester, N. Y., school children who were first-grade pupils in the school year 1952–1953 and who were examined annually for the next four years by one of us (R.A.L.). Although 901 children were followed, the data presented in this report will be restricted to 617 children who were examined each year for four years. The socioeconomic status and the health status in the first grade of the remaining 284 children (who missed one or more of the annual examinations) do not differ significantly from the group followed annually. Acute infections, minor skin conditions, dental conditions, refractive errors, and hearing loss have been excluded from consideration because their detection does not require the professional time and skill of a physician. This point is of particular importance in considering the remediability of adverse conditions. The findings and conclusions drawn from our data are not relevant to dental, hearing conservation, or sight-screening programs in schools.

Results

At the first-grade examination 163 adverse conditions were found among the 617 children who are the subject of this report. All 617 children were carefully examined annually for the next three years. During these contacts it was neither possible nor desirable to separate counseling services from appraisal services. Thus, in addition to whatever counseling and follow-up services were given to parents generally through the school health program of the Rochester Health Bureau, the parents in this study group received special attention. In the case of children with adverse conditions the nature of the condition and the need for medical care were carefully explained to the parent by the pediatrician and public health nurse each year; often special arrangements were made to help the parent secure care beyond what could be expected from the usual school medical service.

As portrayed in Table 1, almost two-thirds of the adverse conditions noted in the first grade were still present when the same children were examined in the fourth grade. In every diagnostic category, except ear, nose, and throat and emotional conditions, more of the original conditions were still present than had been corrected.

Conceivably "correction" might have been related to socioeconomic status, but when schools were grouped to reflect socioeconomic status, as described elsewhere,[5] this hypothesis was not borne

Table 1—Status of Adverse Conditions Noted in First Grade on 617 Rochester School Children When Examined Three Years Later, by Diagnostic Category

Diagnostic Category	Present in First Grade	Status in Fourth Grade	
		Not Present	Present
Orthopedic	32	3	29
Allergic	27	8	19
Emotional	25	18	7
Ear, nose, and throat	22	14	8
Nutritional	18	7	11
Genitourinary	14	6	8
Cardiac	5	1	4
Neurologic	6	0	6
Other	14	7	7
Total conditions	163	64	99

out. As shown in Table 2 children in the least favored schools (Group III) had the largest proportion of "corrections." This difference between the school groups (although not significant statistically) is probably related to the low incidence of orthopedic conditions noted initially in Group III children.[5]

As we have previously pointed out,[6] 14 per cent of the children followed developed one or more new adverse conditions during the three-year, follow-up period. In this group of 617 children 118 new adverse conditions developed; 101 of these were still present at the fourth-grade examination. Thus, the 64 adverse conditions which had been "corrected" during these three years were outnumbered by the new ones that appeared. Two hundred conditions (32.5 per 100 children) were present in the fourth grade as compared to 163 (26.4 per 100 children) in the first grade.

To scrutinize the characteristics and status of care of the adverse conditions present at the fourth-grade examination more carefully, 31 conditions first discovered at this examination have been excluded from consideration. Thus there remain 157 children with 169 ad-

Table 2—Status of Adverse Conditions Noted in First Grade on 617 Rochester School Children When Examined Three Years Later, by Socioeconomic Group

Socioeconomic Group *	* Present in First Grade	Status in Fourth Grade †	
		Not Present	Present
I	58	22	36
II	54	17	37
III	51	25	26
Total conditions	163	64	99

* Group I has highest and Group III lowest socioeconomic status.
† X_2 P = 0.17.

Table 3—Adverse Conditions Present Among 617 Rochester School Children for One or More Years, by Diagnostic Category and Status of Medical Care

Diagnostic Category	Status of Medical Care		Total
	Under Care	Not Under Care	
Orthopedic	30	9	39
Allergic	32	0	32
Emotional	10	14	24
Ear, nose, and throat	5	7	12
Nutritional	14	3	7
Genitourinary	13	3	16
Cardiac	8	1	9
Neurologic	6	0	6
Other	14	0	14
Total conditions	132	37	169

verse conditions which had been noted as present for one or more years prior to the fourth-grade examination. In every case the nature of the condition had been discussed individually with the parent and in almost two-thirds of the cases this had been done for three consecutive years.

Table 3 portrays the diagnostic categories of these 169 conditions and their medical care status at the fourth-grade examination. Almost four-fifths of these conditions were under care. In only two categories, "emotional," and "ear, nose, throat," did the number of children not receiving care exceed those under care. It will be recalled that these two categories were also the only ones which had responded significantly to medical care between the first and fourth grades (Table 1). In addition, they accounted for the largest increment of children with "new" defects noted after the first grade.[6] Thus their predominance in this tabulation as conditions not under care may be a reflection of the relative recency of their onset.

Although evaluation of the follow-up

Table 4—Status of Medical Care of Adverse Conditions Present Among 617 Rochester School Children for One or More Years, by Socioeconomic Group

Status of Medical Care	Socioeconomic Group *			Total
	I	II	III	
Under care	52	44	36	132 †
Not under care	10	12	15	37 †
Care sought but not rendered	(0)	(2)	(3)	(5)
Care not sought	(9)	(9)	(12)	(29)
Not classifiable	(1)	(1)	(0)	(2)
Total	62	56	51	169

* Group I has highest and Group III lowest socioeconomic status.
† X_2 P = 0.16.

process was not the primary purpose of this study, some effort was made at each interview to account for the reason why a condition brought to parental attention one or more years previously was not currently under medical care. Conceivably socioeconomic status of the family could be related to status of care. Table 4 is an analysis of some of the factors bearing on this problem. While a direct relationship appears to exist between socioeconomic status and the proportion of conditions under medical care, the differences are not great (84 per cent in Group I vs. 71 per cent in Group III), and X_2 for the total distribution is not significant ($P = 0.16$).

Failure of the parent to take action accounted for the majority of the conditions not currently receiving care. This factor was not further explored in detail, but it is worth noting that 14 of the 29 conditions so classified were emotional disorders.

In five instances the parent had consulted a physician because of the underlying condition but had been assured that the child needed no care. Two striking examples of this type of case are worth describing. The first is a girl with a history of recurrent febrile episodes, accompanied by abdominal pain and occasional dysuria, who had twice been catheterized in the emergency room of a hospital. The right kidney was palpably enlarged on examination. As a result of referral by the school medical service the child received a urological work-up and was diagnosed as having hydronephrosis and ptosis of the right kidney with ureteral stricture and secondary infection. Operation was advised by the urologist, but the family physician advised against operation and suggested no treatment other than a possible adenotonsillectomy.

The second example is a boy with severe, progressive funnel chest associated with growth failure, repeated respiratory infections, cardiac shift, enlargement and murmur, and evident clubbing of the fingers. As a result of referral from the school medical service operation was advised and the boy sent to a summer camp in preparation for surgery. At camp he gained a few pounds, his hemoglobin rose a few points, and his family physician advised against surgery. The sequel to this story is somewhat happier in that after the fourth-grade examination the mother was strongly urged to return to the chest surgeon. She did so, operation was performed, and dramatic improvement resulted. This condition was not under care at the time of the fourth-grade examination, however, and therefore it is treated in our data as not under care.

Diagnostic categories alone are an inadequate expression of the nature of the problems presented by these children. For this reason an attempt was made to classify each adverse condition in terms of its potential remediability, assuming that ideal and complete medical care was readily available. In this classification most emotional and nutritional disorders and ENT conditions were considered completely remediable, whereas orthopedic and allergic conditions, based on an assessment of the individual diagnosis were largely classified as "somewhat" or "slightly" remediable. In assigning degree of remediability a deliberate attempt was made to scale judgments so that an approximately equal number of conditions would be assigned to each category.

An attempt was also made to estimate the degree of handicap for each condition. This estimate was based on a judgment of the effect or potential effect of the condition itself on the child's school achievement and absenteeism, physical activity and appearance, and social adjustment. These judgments of severity of handicap and degree of remediability are admittedly subjective. They are presented, however, as a summation of opinion in an attempt to

Table 5—Severity and Remediability of Adverse Conditions Present Among 617 Rochester School Children for One or More Years by Status of Medical Care

Severity of Handicap	Degree of Remediability *	Status of Medical Care		Total
		Under Care	Not Under Care	
Severe	Completely	1	0	1
	Somewhat	0	1	1
	Slightly or not at all	13	0	13
	Total	14	1	15
Moderate	Completely	11	8	19
	Somewhat	7	3	10
	Slightly or not at all	29	10	39
	Total	47	21	68
Slight or none	Completely	22	8	30
	Somewhat	46	6	52
	Slightly or not at all	3	1	4
	Total	71	15	86
Total	Completely	34	16	50
	Somewhat	53	10	63
	Slightly or not at all	45	11	56
	Total	132	37	169

* Assuming that ideal care were fully available to all.

round out the picture of adverse conditions among school children as it appeared to us.

An analysis of these 169 conditions by severity of handicap and degree of remediability is presented in Table 5 which also relates these factors to status of medical care. It will be noted that over half the conditions were considered to be only slightly handicapping. For all practical purposes children with these conditions could function as well as children who had no adverse condition. Mild, static, structural abnormalities of posture and feet, or mild attacks of allergic rhinitis which did not interfere with school attendance or function are examples of conditions so classified. Only 9 per cent of the adverse conditions were considered severe and only one severe condition (among the 617 children followed) was not under medical care. This was the case of the boy with the funnel chest, mentioned previously, where care actually was sought by the parent but advised against by the family physician.

Less than one-third of the adverse conditions were considered completely remediable even with ideal care. Only one of the severely handicapping conditions was considered completely remediable. This was another case of funnel chest, this one in a girl whose older brother had had the same condition and was operated upon with complete recovery. This girl's funnel chest is becoming more marked, and she has had repeated bouts of pneumonitis but no other complications. She is scheduled for operation in the near future and should have a complete recovery.

Although both degree of remediability and severity of handicap might have been expected to influence status of care, this hypothesis was not borne out by the data except when the handicap was severe. There are proportionately fewer completely remediable conditions under care than conditions partially or slightly remediable, and there are proportionately fewer moderately handicapping conditions under care than conditions only slightly handicapping. This apparent paradox is related to the diagnostic categories of the 16 conditions classified as completely remediable yet not under care, most of which were emotional disorders.

As factors in the motivation to seek medical care, degree of remediability and degree of handicap work against each other. Severe handicaps are unlikely to be correctable while slight handicaps are likely to be completely at least partly correctable.

In general it would appear that medical care is sought when a handicap is severe enough, but that when it is moderate or slight the nature of the diagnosis is the most important factor affecing the decision of the parent.

Discussion

Before discussing the implications of this descriptive analysis of adverse conditions among elementary school children, it should be pointed out again that dental, hearing, and vision defects have been excluded from consideration. Our findings, for example, cannot be compared with those of Hardy who was dealing with the outcomes of school screening programs for vision and hearing.[7] A majority of the other adverse conditions found among elementary school children appear by their very nature to be "irremediable" and will be "rediscovered" if looked for year after year. A high proportion are only slightly handicapping so that school health statistics which treat them indiscriminately must be interpreted with caution. Most conditions present for some time in the group followed were receiving medical care. Those that were not were in large measure either emotional disorders (where blocks to parental motivation to seek care were compounded by the shortage and expense of treatment resources) or minor handicaps of no great significance.

An approach to adverse conditions among school children in terms of remediability and severity of handicap was first suggested in 1949 by a special committee appointed by the Federal Security Agency.[8] The committee did not separate the two categories of remediability and degree of handicap but assigned numerical weights to some of their specific criteria. In addition, weights were assigned to a number of other criteria such as "progressive," "danger to others," "available facilities," and so forth. They suggested that each disease be scored by summing the products of the weights given to specific criteria and a factor representing the score of each condition (as it pertained to each criterion). We believe our approach is somewhat simpler than this and that there are certain advantages to separating degree of handicap and degree of remediability which are lost if the two are combined into one weighted score. Regardless of the method used, this approach appears to be entirely practical. It adds a new and valuable dimension to the picture of adverse conditions among children of school age. As suggested by the committee, each community should score (or classify) adverse conditions to suit its own needs and situation. No one would deny that children with adverse conditions differ widely, some deserving and needing much more attention than others. There is no reason why this obvious fact cannot be expressed statistically.

In previous reports the role of the school physician as a routine examiner of elementary school children has been decried because the case-finding values of this service appeared to be minimal or nonexistent.[5, 6] The data presented in this report point up a more positive role which a school physician can play. Among the 617 children followed for three years were 12 (about one child in 50) whose severely or moderately handicapping adverse condition was completely or partially remediable yet not receiving care. School medical resources directed toward motivating parents to seek care or even toward its actual provision, when community resources need such supplementation, would seem highly desirable.

Among these 617 children were 76 (about one child in eight) with 83 conditions moderately to severely handicapping. Most of these children were under medical care, but school medical resources directed toward providing the teachers of these children with some understanding of the nature of their handicaps and needs would also seem desirable. Too often these considerations are left entirely to the public health nurse. Not infrequently they require a degree of medical understanding and a type of doctor-to-doctor exchange with private physicians which ask too much of even the most capable nurse.

In brief, concentration of attention and effort to meet the needs of selected children who can be screened from the larger group by means other than a periodic physical examination would appear to be a more constructive role for school medical personnel in elementary schools than a more general diffusion of their efforts.

Summary

An analysis of the "correction" and persistence of adverse conditions among 617 children followed with complete annual medical examinations during the first four years of elementary school has been presented. Almost two-thirds of the conditions present in the first grade were still present in the fourth grade. The increment of new adverse conditions between the first and fourth grade exceeded the number corrected so that relatively more adverse conditions were present at the end of the follow-up period than at its beginning.

One hundred and sixty-nine adverse conditions present for one or more years and thoroughly discussed with and explained to parents are analyzed in somewhat more detail. Four-fifths of these conditions were under medical care at the time of examination in the fourth grade. Parental failure to seek care accounted for most of the conditions not under care. A high proportion of uncared for conditions were emotional disorders.

These 169 adverse conditions were classified in terms of degree of remediability and severity of handicap. Over half of these were considered to be only slightly or insignificantly handicapping and less than one-third were considered to be completely remediable. Thus it is to be expected that many of the "defects" found among school children will persist in spite of treatment. Parents were more apt to seek medical care for severely handicapping conditions and for conditions with a predominantly somatic rather than psychic basis.

In this group of 617 children about one child in eight had a moderately to severely handicapping condition. It is suggested that school medical personnel could profitably concentrate attention upon this group, interpreting their needs to school staff and assisting the small proportion of them not under medical care to obtain such care.

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Health Council's Alan Gregg Fund

In honor of the late Alan Gregg, M.D., the National Health Council has established "The Alan Gregg Fund." Contributions to the Fund will be used to support the Health Careers program, particularly the newly created Commission on Health Careers. The chairman of the Commission is Leonard A. Scheele, M.D., former Surgeon General of the Public Health Service.

Dr. Gregg, as a member of the 1954 National Health Forum, suggested that guidance people from high schools and colleges be brought into the Forum on "Staffing America's Health Services." Out of this grew the Health Careers Project, which brings to young people of the nation new opportunities to explore careers in the whole gamut of health and medical careers. Dr. Gregg over the years was interested in the varied activities of the National Health Council and especially in its reorganization after World War II.

The initiating committee for the Alan Gregg Fund is made up of 21 persons representing various areas of community life, chiefly public health. It includes besides Dr. Scheele, the current and immediate past president and president-elect of the National Health Council. Two-thirds of the committee are members or Fellows of the American Public Health Association.

Contributions may be sent to the Alan Gregg Fund, National Health Council, 1790 Broadway, New York 19.

Determination and Measurement of Particles in City Atmospheres

MORRIS B. JACOBS, Ph.D.; M. M. BRAVERMAN; CHARLES THEOPHIL; and SEYMOUR HOCHHEISER

A simple, direct, and uniform method for counting dust and the measurement of the particle size of such dust in outdoor city air and in nonworkroom atmospheres is detailed. It depends on passing a known volume of air through a Millipore filter, placing this on a slide, adding a drop of cedar oil, and counting and measuring the particles with the aid of a Microprojector. This method has been used for a year.

A number of methods are presently used for the counting of dust in city outdoor and nonworkroom atmospheres and also for the measurement of the size of such dust particles, but no standard method is presently available. Because the count, and consequently the measurement of size from which the size distribution can be obtained, depends on the method of sampling and on the method used for observation or counting, the methods for sampling atmospheric dust as well as the methods for partial counting must be taken into consideration simultaneously.

The most comprehensive review of the methods used for the sampling of atmospheric dust before 1925 was that made by Leonard Greenburg,[1] and subsequent to that time by Jacobs.[2] Methods for the counting of dust, principally industrial dusts, have been detailed by Greenburg and Bloomfield,[3] Jacobs,[2] Goldman and Jacobs,[4] DallaValle,[5] Crossman,[6] Cadle,[7] and by others, reference to whom can be found in the references already cited. The significance of dust counts has been discussed by Dalla-Valle[8] and the reliability of dust counting by Chapman and Ruhf.[9]

There are a number of methods used to collect samples to be counted. Among methods used are impingement, settling, filtration, thermal precipitation, electrical precipitation, and centrifugal precipitation. In air pollution control work the more commonly used sampling devices for outdoor and nonworkroom atmospheric dusts are the Greenburg-Smith impinger and its various modifications, the midget impinger, the Konimeter, the Owens jet dust counter, the cascade impactor, all of which have been described by Jacobs,[2] and the membrane filter.[10]

The methods used for counting the samples obtained in these different ways all vary. For example, in using samples collected by the Greenburg-Smith impinger or the midget impinger a direct count using an ordinary microscope provided with suitable eyepieces, generally a 7.5X or 10X ocular and a 10X objective, is the general practice whereas the Owens jet dust counter samples are examined in order to be counted with an oil-immersion objective. It is clear that many more particles of smaller size will be observed in the Owens jet dust counter samples than in the Greenburg-Smith impinger samples. Consequently, the size distribution will be greatly different in both such counts and the average size of the particle in the Owens jet counter method will be smaller than that of the Greenburg-Smith impinger sample.

The Laboratory of the Department of Air Pollution Control, City of New York, has used various methods for the sampling and subsequent counting of dust in urban air. Among these were the Greenburg-Smith liquid impingement method, the Owens jet dust counter method, the electrostatic precipitation method, and the Millipore filter method. Both the direct reading microscope equipped at times with a Whipple ocular disc and at other times a Porton graticule, and the MSA Microprojector were tested at various magnifications to obtain counts. The method finally selected has been used by the Laboratory for about a year. It has been found the most satisfactory with respect to: (a) reproducibility of results, (b) ability to count those particles most significant in atmospheric pollution studies, and (c) diminution of eyestrain.

Sampling—A total of 2.47 cubic feet of air is aspirated in an interval of seven minutes through a one-inch Millipore filter paper (17mm in effective diameter) held in an aerosol microanalysis holder,[10] using the 10 liters per minute orifice. This volume of air is the most satisfactory for dust counts in the range of 0–25 MPPCF.

Counting—The filter paper on which the sample was collected is placed on a microscope slide (25 x 75 mm, 0.038 mm thickness). A drop of cedar oil or Shillaber's nondrying immersion oil is placed on the paper and a microscope slide cover glass is set over it. The slide prepared in this fashion is placed in the MSA Microprojector and a dust count is made at a magnification of approximately 4,500. A 45X objective with a numerical aperture of 0.85 and a 30X ocular are used. The count is continued until sufficient fields are counted to give approximately 500 particles. Each field of the screen is equivalent to an area of 0.0024 mm^2.

Particle Size Measurement—The size distribution of the various particles is determined during the dust count by use of the calibrated boxes on the screen. These are 11, 2, 1, and 0.4 microns in length.

Calculation—The dust count is calculated by means of the formula

$$\text{MPPCF} = \frac{\text{Total Count} \times \text{Effective Area}}{\text{Cubic Ft of Air Sampled} \times \text{Number of Fields} \times 0.0024 \times 10^6}$$

Calibration of Microprojector—The screen of the Microprojector is calibrated using a stage micrometer having divisions which are 0.01 mm apart. Actual dimensions of the screen itself are 25 x 20 cm. In this system 5.5 divisions on the stage micrometer are indicated as five boxes of the projection screen. This is equivalent to a distance of 0.055 mm. The total magnification is therefore the width of the screen divided by the apparent size of the micrometer scale, that is 250 mm divided by 0.055 mm which equals 4,545.

Results—In Table 1 the results of four typical determinations are tabulated giving the actual particle count; the number of fields counted; the calculated dust count expressed in MPPCF; the particle size distribution in microns, that is the number of particles counted as: less than 1μ, 1μ, 2μ, 3μ and 4μ; and the percentage of particles which are less than 1μ in size. In Table 2 the variation in dust count from March through November, 1956, is given. In Table 3 the typical variation of dust count for the month of October, 1956, is tabulated, and in Table 4 representative dust counts at several locations in the City of New York are given.

Discussion

The results obtained indicate that more than 80 per cent of the dust

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Table 1—Particle Size Distribution

Particle Count	No. of Fields Counted	MPPCF	No. of Particles in Each Size (μ)					Per cent Less than 1 μ
			Less than 1	1	2	3	4	
474	3	153	378	58	22	12	2	84
536	6	80	440	60	16	20	None	83
596	4	141	516	60	24	4	None	87
591	6	88	495	57	24	15	None	85

particles suspended in outdoor city air are less than 1μ in size and are in the range of about 0.5 to 1μ. A magnification of between 1,000 to 1,500 is necessary to see particles of this size. In our experience at the Laboratory of the Department of Air Pollution Control, City of New York, most of the counts range between 5 to 15 MPPCF with a minimum of the order of 3 MPPCF and a maximum of the order of 30. The preponderant number of particles are under 2μ in size and virtually all are under 3μ in size. For this reason particles over 4μ are not counted.

It must be stressed that certain conventions have to be adopted in the measurement of dust particles because dust particles seldom have a definite geometrical shape. For this reason they really do not have what is commonly called a diameter so that an arbitrary convention has to be adopted, namely, that the size of a dust particle is assumed to be the distance between the extreme points of the dust particle when measured in a horizontal direction.[4, 11]

It must also be noted that because the number of particles vary markedly with the method of sampling and the method

Table 2—Variation of Dust Count in New York City (MPPCF)

Month	1956		
	Max.	Min.	Av.
March	26.1	4.9	12.7
April	24.0	1.5	9.1
May	6.7	1.5	4.1
June	8.6	1.4	3.2
July	9.1	0.7	4.9
August	7.8	2.0	4.2
September	14.3	1.4	4.3
October	17.4	1.9	5.1
November	6.8	2.1	4.2
Average			4.7

Table 3—Daily Variation of Dust Count October, 1956

Date	MPPCF
1	2.5
2	7.1
3	2.9
4	6.6
5	2.9
8	3.9
9	2.7
10	1.9
11	3.4
15	7.9
16	17.4
17	5.2
18	4.9
19	5.4
22	2.4
23	2.6
24	3.0
25	3.0
26	2.9
29	3.1
30	3.7
31	6.3
Average	5.1

Table 4—Representative Dust Counts at Various Locations in New York City

Location	MPPCF
E. 69th St. and York Ave.	5.2
Maiden Lane and Water St.	3.8
Cherry and Jefferson St.	3.8
14th St. and 9th Ave.	4.5
West End Ave. and 64th St.	6.8
121st St. and Lexington Ave.	4.4

of counting that the size distribution of such particles will vary markedly. Hence, it is essential that when dust counts or particle size measurement results are given, the method of sampling and counting used be mentioned with the results.

One further factor should be taken into consideration. In industrial hygiene work the method used for many years by members of the U. S. Public Health Service—in which a Greenburg-Smith impinger or one of its modifications is used as the sampling instrument—is commonly accepted as the "standard" method for sampling. In this method a filar micrometer eyepiece is recommended for measurement of the particles being counted. When this method is used for the counting of dust particles in outdoor city or nonworkroom atmospheres, that is, in urban or "domestic" atmospheres the particle count is of the order of one one-hundredth of that mentioned above and the size of most of the particles counted is over 1μ. These factors must be taken into consideration whenever dust counts and particle size distribution measurements are compared.

Conclusion

A simple and direct method for the counting of dust and the measurement of the particle size of dust in outdoor city and nonworkroom or urban atmospheres has been detailed. It has been used successfully in the Laboratory of the Department of Air Pollution Control, City of New York, for a year.

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Mortality, Morbidity and Retirement

JAMES S. TYHURST, M.D.; LEE SALK, Ph.D.; and MIRIAM KENNEDY

The findings reported here offer a convincing refutation to the often-heard grumblings about the ill-effects of retirement upon the older employee. Who among us is so young that he will find nothing of personal concern in this study?

In our work-oriented society * retirement is generally looked upon with distaste. It is frequently equated with illness, declining abilities, and other characteristics of degeneration. Among some people retirement is looked upon as the result of these characteristics. Among others retirement is looked upon as the cause of degeneration and early death. In the process of doing a study of what happens to people following retirement, how they think and feel, and what factors in their lives influence the manner in which they deal with retirement, we were constantly struck by the existing ideas about retirement which had arisen, not from scientific investigation, but from isolated impressions. Among these isolated impressions which have been generalized extensively and not investigated scientifically is that people who retire show a deterioration in health and die shortly after retirement. Characteristic of this idea is the following: "A few years ago many workers died a short time after their retirement, presumably from psychic trauma provoked by the sudden stopping of the daily work routine, inactivity, and a reduced standard of living," etc.[2]

The theoretic basis behind this idea is that retirement is a stress and as such contributes to deterioration.† The purpose of the present paper is to report our findings with regard to the effect of retirement on mortality and health. A more general statement of the concepts used in this study of retirement may be found elsewhere.[7]

Subjects

Both the data on mortality and the data on health were obtained from pensioners in a large communications industry. Our mortality data were obtained from a study of the total population of male pensioners from this company since they inaugurated their retirement plan in 1917, and not from a sample of these people. The data on health were obtained from samples of male pensioners from a department of about 9,000 employees. In studying this group samples of varying sizes were drawn for studies of different kinds and intensity (Table 1).

The retirement program in this company is considered to be flexible, in that the employees can retire between 60 years of age and 70 years of age. Actually, some people may retire before 60 if they have achieved 30 years of service or 25 years of service and age 55. For this group the reason for retirement has usually been health or company-initiated retirement when the worker's

* It has been said that "Modern man is a worker. To work is his ideal. The modern male costume since the end of the 18th century is essentially a workman's dress."[3]

† Referred to as the "retirement impact theory."[4] This idea suggests that death rates should be higher, survival rates lower, and life expectancy reduced by retirement. One author has said, "There is evidence of premature deterioration when retirement deprives the organism and the mind of activity."[5]

Table 1—Populations and Methods of Study

Data	Number	Method
Mortality Data		
Death Rates	898	Statistical Analysis of Company Data
Survival Rates	793	Statistical Analysis of Company Data
Life Expectancy	224	Statistical Analysis of Company Data
Morbidity Data		
General Sample	257	Company Record Review Mail Questionnaire
Subsample	65	Company Record Review Mail Questionnaire Intensive Case Study

job had become obsolete. For those retiring between 60 and 70 the average age at retirement is 63 years. The concept of flexibility allows the company to retire an employee when he is no longer able to meet the requirements of any available job adequately even though he would prefer to stay at work. We have found that approximately 65 per cent of these employees retired unwillingly.

Methods and Results

Mortality—In order for us to see whether or not people die shortly after retirement, or whether retirement affects life expectancy, we had to know the birth date, date of retirement, and date of death (if the pensioner dies) for all subjects under study, and whether age at retirement was influenced by life expectancy risk at time of retirement.

The subjects under study, as mentioned before, constituted the total population of males who have retired from this company since 1917. The necessary data were provided for us by the company. From these data we determined each pensioner's age at retirement, years spent in retirement, and age at death, and from these calculations we used three methods to determine mortality in relation to retirement: death rates, survival rates, and fulfillment of life expectancy.

The death rates following retirement were worked out on 898 retired male pensioners retiring between 1917 and 1954. The death rate is the per cent of people in a given age group dying within a given period. In our study we calculated the percentage year-by-year following retirement for people retiring at 60 years of age and over. It can be seen that, for this population, the death rate follows an ascending curve (Figure 1). If retirement were a stress that precipitated death shortly after retirement, we should expect, just after retirement, a death rate higher than in later years. Our data do not bear this out.

The next question we must ask is: "Does the age of retirement affect death rates following retirement?" These data show no significant differences in death

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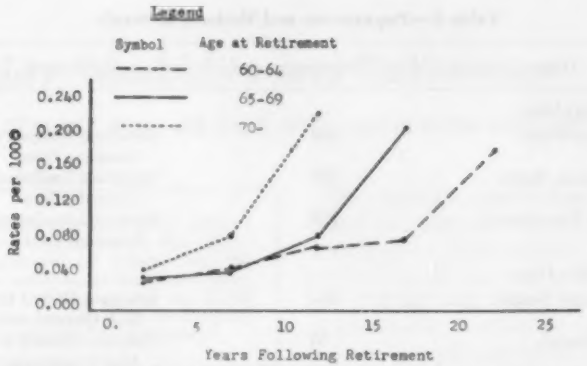

Figure 1—Death Rates Following Retirement Among 898 Male Retired Pensioners Who Retired Between 1917–1954

rates between groups retiring at different ages (Figure 2). We do see, however, some slight indication that the death rates in the later years following retirement are higher for people who have worked to a later age, but the differences are not statistically significant.

Another method utilized for dealing with our mortality data was survival rates. The survival rate is the per cent of a given population surviving a given period of time. This material was calculated on 793 pensioners who retired between 1917 and 1950 (Table 2). From these data it is evident that there is no decrease in the chances of surviving the five-year period immediately following retirement for any of the age groups when compared with the second and third five-year periods following retirement. In fact, this period immediately following retirement shows a slightly higher survival rate than the years following, when age is held constant. That is, by comparing age

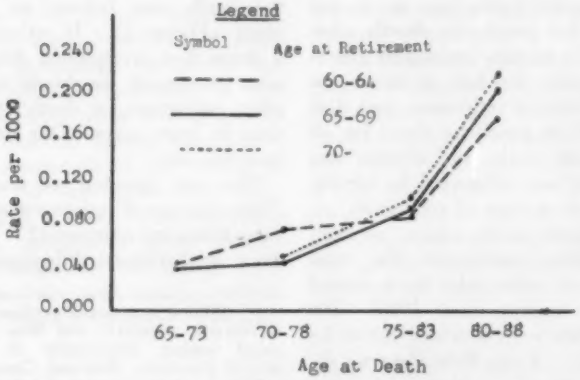

Figure 2—Death Rates Following Retirement According to Age at Death Among 898 Male Retired Pensioners Who Retired Between 1917–1954

Table 2—Survival Rates by Age and Five-Year Period of Retirment for 793 Retired Pensioners Who Retired Between 1917 and 1950

Age at Retirement	Five-Year Period of Retirement					
	First		Second		Third	
	Base No. *	Per cent Surviving This Period	Base No. *	Per cent Surviving This Period	Base No. *	Per cent Surviving This Period
50–59	154	81.2	87	79.3	47	76.6
60–64	322	86.0	180	77.8	99	63.6
65–69	262	81.3	131	77.9	73	64.4
70 plus	55	76.4	24	62.5	11	18.2

* Base No. is the number of pensioners of this age group entering the specified period.

groups, the reverse may be true. Finally, it might be noted that the survival figures here are remarkably close to those provided in the United States Life Tables of 1939 and 1941 for the age group 60–64 and 65–69.

The third method utilized for examining our mortality data was to see how many pensioners fulfilled their life expectancy. Life expectancy was calculated from data on the male portion of the general population in Canada at the same age and for the same years that the subjects retired.* We were able to study only 224 subjects, since we had to eliminate those retiring after 1935 because we could not know whether or not they had fulfilled their life expectancy. Of the 224 subjects studied, exactly one-half lived below this period and one-half lived above this period (Table 3). Furthermore, we have no indication that age at retirement affects life expectancy in a significant manner. We were able to gather additional information regarding this group and we found that life expectancy was not affected by type of occupation, level of supervision, marital status, monthly income, or average annual income during the 10 years prior to retirement.

Morbidity—The next phase of our study deals with the relationship of physical health to retirement. With re-

* We would like to thank the Dominion Bureau of Statistics, Ottawa, for preparing this material for us. The point of this comparison is that the general male population, 1871–1951, is one in which formal retirement with pension is not a characteristic feature in the work life of its members.

Table 3—Life Expectancy in Relation to Age at Retirment for 224 Retired Pensioners Who Retired Between 1917 and 1935

Age at Retirement	Lived Above Life Expectancy		Lived Below Life Expectancy		Total	
	No.	Per cent	No.	Per cent	No.	Per cent
50–54	4	3.6	7	6.3	11	4.9
55–59	16	14.3	14	12.5	30	13.4
60–64	46	41.1	53	47.3	99	44.2
65–69	37	33.0	31	27.6	68	30.4
70–	9	8.0	7	6.3	16	7.1
Total	112	100	112	100	224	100

Table 4—Pattern of Health: Before, During, and After Retirement, According to Attitude Toward Retirment

Health Pattern	Attitude Towards Retirement						
	Voluntary			Involuntary		Don't Know	Total
Before During After	Welcome	Unwelcome	Don't Know	Unwelcome	Don't Know	Don't Know	
	33	43	7	10	2	1	96
	34	31	6	10	-	1	82
	2	5	1	1	-	-	9
	2	-	-	-	-	-	2
	5	11	1	1	-	-	18
	3	2	-	-	1	-	6
	1	1	-	-	-	-	2
	10	5	-	-	-	-	15
Don't Know	11	12	-	4	-	-	27
Total	101	110	15	26	3	2	257

spect to health, we have data from three sources. The first is the detailed medical records of the company on each pensioner. The company made available the pensioner's complete health and accident record, which includes specific diagnoses and entry of minor ailments over the whole period of the pensioner's employment. Furthermore, following retirement, the pensioner is visited periodically and a report made on his health and general status, with a reference also to illnesses, hospitalizations, and symptoms. The subjects in this phase of the study were 257 male pensioners from a department of 9,000 employees.

These data have been treated by making judgments concerning the level of physical health based upon the number of illnesses, the number of absences for illness, the length of such absences, the nature of the symptoms, and the diagnoses. The judgments made were: good, fair, poor, very poor. Hyphenated ratings, such as good-fair, reflect some fluctuation between these levels of health over the period observed.

From these judgments concerning the levels of health before, during, and after retirement, patterns of health have been derived in relation to retirement (Table 4). The pattern on the left side of the table indicates the relative health pattern

Table 5—Health Status Before Retirement According to Attitude Toward Retirement

Health Status	Attitude Toward Retirement: Voluntary — Welcome	Voluntary — Unwelcome	Voluntary — Do Not Know	Involuntary — Unwelcome	Involuntary — Do Not Know	Do Not Know — Do Not Know	Total
Good	35	45	3	7	1	1	92
Fair	25	20	—	3	—	1	49
Poor	30	31	11	13	—	—	85
Very Poor	—	3	1	2	2	—	8
Good-Fair	2	2	—	—	—	—	4
Good-Poor	2	1	—	—	—	—	3
Fair-Poor	3	3	—	1	—	—	7
Poor-Very Poor	1	3	—	—	—	—	4
Do Not Know	3	2	—	—	—	—	5
Total	101	110	15	26	3	2	257

in respect to retirement. That is, the left-hand dot indicates the health before retirement; the dot in the middle indicates the health during * retirement; and the dot to the right indicates the health after retirement. For the total group with respect to health pattern approximately three-quarters of the pensioners showed either no change or an actual improvement in their health. Of these, about 37 per cent showed no change and 40 per cent showed an actual improvement in their health status as evaluated by us from before to after retirement. Furthermore, it is clear that attitude toward retirement is unrelated to the health pattern. We dis-

* The term "during" refers to the time during which actual retirement is being decided and implemented.

Table 6—Health Status During Retirement According to Attitude Toward Retirement

Health Status	Attitude Toward Retirement: Voluntary — Welcome	Voluntary — Unwelcome	Voluntary — Do Not Know	Involuntary — Unwelcome	Involuntary — Do Not Know	Do Not Know — Do Not Know	Total
Good	47	46	2	7	1	1	104
Fair	18	19	—	3	—	1	41
Poor	28	34	11	14	—	—	87
Very Poor	2	4	1	2	1	—	10
Good-Fair	—	1	1	—	—	—	2
Fair-Poor	2	2	—	—	—	—	4
Poor-Very Poor	—	1	—	—	1	—	2
Do Not Know	4	3	—	—	—	—	7
Total	101	110	15	26	3	2	257

Table 7—Health Status After Retirement According to Attitude Toward Retirement

Health Status	Attitude Toward Retirement						
	Voluntary			Involuntary		Do Not Know	
	Welcome	Unwelcome	Do Not Know	Unwelcome	Do Not Know	Do Not Know	Total
Good	70	68	7	14	1	1	161
Fair	8	13	—	1	—	—	22
Poor	2	4	6	4	1	—	17
Very Poor	—	3	1	—	1	—	5
Good-Fair	4	3	1	1	—	1	10
Good-Poor	1	4	—	—	—	—	5
Good-Very Poor	2	—	—	—	—	—	2
Fair-Poor	1	—	—	2	—	—	3
Poor-Very Poor	—	1	—	—	—	—	1
Do Not Know	13	14	—	4	—	—	31
Total	101	110	15	26	3	2	257

tinguished two factors with regard to attitude toward retirement, one being voluntary versus involuntary, the other being welcome versus unwelcome. "Voluntary" means that the pensioner filled out all the forms and signed a statement requesting retirement. "Involuntary" means that he refused to do this. In addition to this we found that although some individuals filled out the forms and complied with the company regulations, they did not want to retire. The actual feelings of the pensioner himself are characterized by the category of welcome versus unwelcome. In effect, we distinguish between conforming with company regulations regarding retirement and the pensioner's actual feelings toward his imminent retirement.

The actual ratings made with respect to good, fair, poor, etc., with regard to the periods before, during, and after retirement used to establish the health pattern just examined are shown in Tables 5–8.

We can see that there was a majority of pensioners in good health before retirement (Tables 5 and 6). The ratings of health during retirement (Tables 5 and 7) indicate again a majority of pensioners in good health, even more than were seen in the preretirement period, fewer pensioners in fair health, and approximately the same number in poor health.

The ratings of health for the period following retirement (Tables 5 and 8) show a rather significant increase in the number of people in good health and a very significant decrease in the number of pensioners in fair, poor, and very poor health. It should be noted that the after retirement period ranges from one to 22 years following retirement depending, of course, upon when the subject retired.

The contention that retirement creates a stress which results in a deterioration in health is not borne out by our data on this population. On the contrary, there is very good indication that their health improves following retirement, as indicated both by the actual health ratings themselves and the patterns of health which were derived from these ratings.

Table 8—Physical Symptoms and Illnesses Reported After Retirement by 257 Male Pensioners, According to Attitude Toward Retirement

Physical Symptoms and Illnesses	Attitude Toward Retirement						
	Voluntary			Involuntary		Do Not Know	
	Welcome	Unwelcome	Do Not Know	Unwelcome	Do Not Know	Do Not Know	Total
Cardiovascular	24	35	9	7	—	1	76
Muscular-Skeletal	13	16	1	10	—	1	41
Respiratory	10	13	3	4	—	—	30
Nervous System	9	12	1	1	2	—	25
Somatic-Sensory	4	16	—	4	—	—	24
Gastrointestinal	7	6	—	2	—	1	16
Major Operations	8	16	—	—	—	—	24
Hypertension	5	10	1	1	—	—	17
Asthma	4	5	—	3	—	—	12
Fatigue, Weakness, Debility	4	4	2	1	—	—	11
Ulcer	1	4	1	—	—	—	6
Skin	2	2	—	—	—	—	4
Venereal	—	1	—	—	—	—	1
Colitis	1	—	—	—	—	—	1
Other	2	7	2	2	—	—	13

Let us examine briefly the physical symptoms and illnesses reported after retirement by the 257 male pensioners under study (Table 9). The physical symptoms and illnesses listed in the left-hand column are listed according to the frequency with which they were reported. Cardiovascular illness and arthritis, which are classified under muscular-skeletal, lead the list as they do for aged populations studied elsewhere.[1, 6]

In addition to these data it was felt that it would be of value to secure information based upon the pensioner's own evaluations of his circumstances. To secure this from the whole population a mail questionnaire was prepared covering all aspects of the immediate retirement situation and including detailed questions concerning retirement expectations, level of activity, occupation, and health. A remarkably high return was secured, in that 78 per cent of those pensioners who were actually accessible returned the mail questionnaires.*

On the basis of the pensioners' own evaluations (Table 10) we were able to determine the pattern of health from the period during retirement to after retirement. We were not able to evaluate the preretirement health on the basis of this mail questionnaire. The results obtained are in agreement with the health data presented previously in the

* At the time the mail questionnaire was sent out 27 of the pensioners were known to be dead, so that of the 257 pensioners, questionnaires were sent to 230. Of these 230, we learned subsequently that 20 more had died and 16 were too ill to reply. An investigation of the type of illnesses and the onset of illness for these 16 pensioners "too ill to reply" indicates that there was no temporal relationship between illness and retirement for all 16. They had either been ill for a number of years prior to retirement or became ill many years afterward. Of these 16 pensioners, six had strokes, four were psychotic, four had coronary disease, one was senile, and one had a brain tumor.

Table 9—Pattern of Health: During to After Retirement Based on Self-Rating and According to Attitude Toward Retirement

Health Pattern	Attitude Towards Retirement						
	Voluntary			Involuntary		Don't Know	Total
During / After	Welcome	Unwelcome	Don't Know	Unwelcome	Don't Know	Don't Know	
●—●	57	35	-	7	-	-	99
●—○	6	10	-	1	-	-	17
○—●	9	11	-	4	-	-	24
Don't Know[b]	29	54	15	14	3	2	117[a]
Total	101	110	15	26	3	2	257

[a] 47—Dead.
16—Too ill to reply to mail questionnaire.
54—No reply or no answer to the question.

sense that the majority of the pensioners show either improvement or no change in health during this period of time, while very few show a decline in their health status.

The pensioners' own ratings of health at the time of retirement again substantiate the findings presented before, in that there is a majority of pensioners reporting excellent and good health for this period. The self-rating of health status for the period after retirement shows again a majority of people in good health. The majority of pensioners show either an improvement or no change in health following retirement and relatively small proportion of pensioners reporting poor health.

Table 10—Self-Rating of Health Status After Retirement According to Attitude Toward Retirement

Self-Rating of Health Status	Attitude Toward Retirement						
	Voluntary			Involuntary		Do Not Know	
	Welcome	Unwelcome	Do Not Know	Unwelcome	Do Not Know	Do Not Know	Total
Good	42	32	—	6	—	—	80
Fair	24	17	—	3	—	—	44
Poor	4	6	—	—	—	—	10
Very Poor	3	1	—	3	—	—	7
Do Not Know [a]	28	54	15	14	3	2	116
Total	101	110	15	26	3	2	257

[a] 47—Dead.
16—Too ill to reply to mail questionnaire.
53—No reply or no answer to the question.

The third method for studying health in relation to retirement was to utilize an intensive case-study approach. The sample studied intensively consisted of 65 pensioners representative of the larger sample of 257 with respect to level of supervision, income, age at joining the company, age at retirement, years in retirement, attitudes toward retirement, as well as postretirement activities. The only major discrepancy between the sample of 65 and the population from which they were selected was in the area of mobility. The sample interviewed intensively tended to show less change of residence following retirement, which is understandable, because these people were more accessible to us. The pensioners were seen at home in interviews lasting up to six hours in one to three visits. The interviews were generally unstructured, carried out by trained interviewers, with the one proviso that guidance was provided by a minimum data protocol, which served as a regular method for organizing and recording our data. The interview was concerned not only with the retirement situation in all its aspects, but also with detailed anamnestic data and an intensive review of the individual's present social situation and psychologic status. Following the interviewing and recording of data, each pensioner seen was discussed exhaustively in a team conference lasting about three to four hours, at which a general formulation of the pensioner's retirement adaptation was made by the research group, together with a statement of the natural history of retirement characteristic of that particular person, and the relevant general factors that seemed to have determined the particular individual history. The data obtained from the intensive case study substantiated the more general findings which we have already discussed.

Finally, with regard to psychologic status, on the basis of the presence or absence of subjective or objective psychologic distress, 75 per cent of the pensioners studied intensively appeared to be in good general adaptation to retirement at the time of the study; 17 per cent appeared to be frankly distressed, in varying degrees from overtly phychotic to showing a general dissatisfaction, depression, or anxiety; and 9 per cent appeared still to be in a state of postretirement turmoil.

Summary and Conclusions

Before concluding, we would like to point out some of the weaknesses in our study and suggest better possible ways for future investigations of this problem. We hasten to add that we do not believe that these weaknesses seriously affect our conclusions because they are supported consistently by findings we have obtained using various methods.

We feel that the ideal experiment would be to study two samples from the same population, using the methods we have described, one of which is retired at a given age and the other allowed to work for approximately five more years. If these two samples, selected at random, are followed for the necessary period of time—at least five years—the statements regarding the affects of retirement on mortality and health would be made under the best methods of control. This ideal experiment, we can readily see, is not possible considering the existing structure of industry.

We can recommend, however, a practical experiment which comes as close to the ideal as we can imagine. That is, using the same methods mentioned previously in comparing health and mortality for one group from an industry retiring people at 65 years of age, with another group from a comparable industry that works until 70 years of age and then retires. The comparisons would be made for the five-year period between 65 and 70. We shall look for-

ward to the results of such an experiment, but we are confident that they will confirm the results just presented.

All the results obtained from the various methods of study lead us to conclude that retirement in the industrial population under study does not hasten death, nor does it lead to deterioration of health. On the contrary, we have given some evidence to show that mortality is lower in the period immediately following retirement than it is later on, regardless of the age at retirement. There is also some indication that people retiring at a younger age have lower mortality rates in the later years than do people who retire at an older age. With regard to health we see evidence that there is an improvement in health status rather than a decline for the majority of the people studied.

ACKNOWLEDGMENT—We would like to express appreciation for the assistance and cooperation of the Bell Telephone Company of Canada whose pensioners were the subjects in this study. We would particularly like to thank those in the company whose help and interest made the study possible: Dr. W. H. Cruikshank, director, Public Relations, formerly medical director; A. Entwistle, general supervisor, Benefits and Thrift; Miss J. S. Carter, supervisor, Benefits and Thrift; Miss A. C. L. Hancock, assistant supervisor, Benefits and Thrift; and Mr. J. A. Fraser, staff supervisor, Methods. The careful review of our statistical procedures and findings by Dr. Ernest Gruenberg and Richard Kassius of the Milbank Memorial Fund have been most helpful. Finally, without the cooperation of the pensioners themselves the study would not have been possible and we owe them a debt of gratitude for their interest and help.

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Evaluating Medical Care Programs

The American Public Welfare Association has published a "Self-Evaluation Schedule for Medical Assistance Programs." This 35-page multilith schedule has been carefully and comprehensively developed to highlight the many diversified factors involved in the successful operation of a medical assistance program. The pertinent items in the full gamut of services needed for a well rounded program are identified and self-searching questions concerning them are couched so that the resulting analysis is simplified and concise. This same schedule can be applied with modifications to the medical care aspects of programs carried on by public health agencies.

American Public Welfare Association, 1313 E. 60th St., Chicago 37, Ill.; $1.00.

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REGINALD MYERS ATWATER, M.D. — 1892–1957

As the Journal goes to press the death of Reginald Myers Atwater, M.D., is announced. Dr. Atwater was executive secretary of the Association for 22 years and served in this capacity with wholehearted devotion. The Journal and the Association extend their sympathies to Dr. Atwater's family.

The Public Service Award Program of the Life Insurance Business

For close to fifty years public health in America has profited from the services of the life insurance companies and their field personnel. Reflecting the community of interest between their business and the health and welfare of the public they serve, many of the companies have participated in a variety of helpful activities. Some made a free nursing service available to certain of their sick policyholders. Others were instrumental in advancing local health projects, including the appointment of full-time health officers, the erection of tuberculosis sanatoria, and various immunizing campaigns. More recently, the companies, through their Medical Research Fund, have supported investigations in the circulatory diseases and the training of research personnel in this field. Many of them are making sizable contributions to aid medical education generally. We can also recall with satisfaction the valuable services of a number of life insurance leaders who achieved high office in our Association.

It should, therefore, surprise no one that a new and promising activity has recently been launched by the life insurance business to advance the health and welfare of the country. This is the Public Service Award Program of the Institute of Life Insurance, acting in cooperation with the National Association of Life Underwriters. The former organization is the public relations agency of the life insurance business; the latter is the trade society of the life agents themselves.

Their joint program is to encourage local Life Underwriters Associations—of which there are nearly 700 in all parts of the country—to interest their members in the health and welfare of their communities and to take an active part in supporting these public operations. A series of newsletters has been sent to the life insurance agents of the country, outlining possible areas for their action, but always leaving the choice of the particular project to the local group, after consulting with the health and welfare leaders of the community. To further stimulate the men in the field the Public Service Award Program each year presents a plaque to the three Life Underwriters Associations, according to size category and selected by a Committee of Judges made up of a number of leaders from the health and welfare field, on the basis of the most effective work done and results achieved.

In the first year's program, just closed, over 80 Life Underwriters Associations were enrolled and reported a great variety of operations performed by their members. Some have aided in connection with the various local fund drives and, more particularly, the Community Chest, the Red Cross, and Heart Association campaigns. Others have taken leadership in alerting the general public as to the needs of their public schools and other educational facilities. Still others have engaged in training personnel to serve as volunteers in various capacities in local health and welfare organizations. And some have taken positions on their boards of directors.

What is particularly encouraging is the warm response of the leaders in local health and welfare agencies to the services rendered by these insurance men. Thus:

"I am pleased to inform you of the tremendous support given our association by many of the Underwriters in the Idaho Falls area. As an example of their efforts, the Heart Sunday Drive in Boise jumped from $1,700 to more than $5,500 for one day. These Underwriters were standing by all day with their cars to help our volunteer Heart Sunday workers."

"The Life Underwriters have been outstanding in their faithfulness to their assignments, the keen insight into the patients' problems, the strong realization of the vastness of the problem of mental illness, and the important part that good citizens in the community play in this."

In the first year's Award Program the winning Associations were: the Dallas Association for its contribution to cancer control in its area, the Omaha Association for its contribution to the United Red Feather Campaign, and the Jonesboro Arkansas Association for its contribution to the Heart Fund Campaign.

This is a continuing operation of the life insurance business and it is hoped that many more Life Underwriters Associations will become active in it in the years ahead. It is suggested that health officers and leaders in community health and welfare agencies seek out the aid which can be had from their local underwriters, acting through their Association. Projects adapted to this group of active businessmen will be received in a spirit of cooperative action. There is much of promise in the development of this area of cooperation between the life insurance business on the one hand and the public health and welfare agencies on the other.

A Decade of Hill-Burton

It is just 10 years ago that the first grant was awarded under the Hospital Survey and Construction Act, better known as the Hill-Burton Act. With the passage of this law in 1946, the United States for the first time in its history embarked on

a systematic, nation-wide hospital construction program with financial aid from the federal government. The aim of the program was twofold: first, to help the states in surveying and establishing their needs for hospitals and health centers and in drawing up plans for the provision of needed facilities; second, to aid in carrying out these plans by assisting in the construction of the needed hospitals and health centers.

The Hill-Burton program was the answer to a long-felt need and when the first project application was approved in September, 1947, an operation began that is now a multibillion dollar undertaking. A statistical review and analysis of the Hill-Burton program, published by the Public Health Service, reveals the vast sweep of this pioneering enterprise. To date, 3,514 projects have been approved, with a total estimated cost of $2,874,587,085. The contribution of the federal government comprises approximately one-third of this sum. The number of new hospital beds completed or under construction is 152,593. Of this total, 121,456 beds are in general hospitals, 13,245 in mental hospitals, 7,118 for tuberculosis, 7,064 for chronic disease patients, and 3,710 beds in nursing homes. Fifty-six per cent of the new hospitals have fewer than 50 beds and 22 per cent have more than 50 but less than 99.

For the most part, the general hospital projects are located in smaller urban communities and rural areas. Southern states account for one-half the Hill-Burton projects. Fifty-three per cent are in communities of 5,000 or less population; only 13 per cent are in cities with 50,000 or more inhabitants. Perhaps most signficant is the fact that of the 1,111 completely new general hospital projects, 51 per cent are in places where there had previously not been any hospital.

Clearly, a long step forward has been taken toward remedying deficiencies in hospital facilities throughout the country. At the same time, this phenomenon raises a number of problems and questions. How effective and efficient is the service provided by these facilities? What has been their impact on the communities served by them? To what extent are the facilities created under the Hill-Burton program coordinated with other health facilities in the area? What essentially is the contribution of the Hill-Burton program toward the ultimate goal of adequate health care for all the people? Here is a virgin territory for exploration and it seems reasonable to expect that knowledge acquired by such forays into terra incognita will result in more effective application of federal and state resources to the creation of health care facilities.

Health Organization and the Community

The past fifty years have witnessed in the United States an unprecedented overall trend toward the improvement of community health. The diseases of infancy, youth, and early adulthood have been reduced to such an extent that more and more people live into the older years and the community must concern itself with the health problems of a maturing population. Thus, the problems that loom large today involve the control or prevention, if possible, of the less remediable chronic, noncommunicable diseases. At the same time the community health program has broadened to include, wherever feasible, other elements and situations which may adversely affect the physical and mental well-being of the community. The widening horizons of public health have in recent years come to include such problems as accident prevention and mental illness, as well as renewed emphasis on the con-

trol of the physical environment due to new factors introduced by our expanding and changing industrial technology. Recent years have also brought increasing attention to the social and economic changes accompanying our expanding industrialism and their consequences for the public health. Among these are the continuing movement of population from the farm to the city and the countervailing flight from the city to suburbia. Obviously, a whole set of new problems faces us, and as we proceed to tackle them it becomes increasingly clear that the organization and coordination of community health services will have to be considerably altered in order to be able to meet adequately the demands that will be made upon them in the future.

The realization that endemic and epidemic disease caused by such factors as defective sewerage or infected milk was a problem of the entire community led to the creation of the modern public health organization. This institutional development was further buttressed by a growing awareness that from the point of view of the community many forms of ill-health represented social wastage that could be eliminated. Since the nineteenth century health has been one of the great themes of social anxiety. As new areas of public concern and obligation were defined by advancing knowledge in the field of health, the administrative organs that had been set up to protect the health of the community endeavored to respond in an appropriate manner. Unfortunately, much of this was on an ad hoc basis. Furthermore, fundamental economic, social, and demographic trends have outstripped the growth of administrative and institutional forms in the area of community health. This is particularly true with regard to suburbanization and the growth of metropolitan areas. In such areas communities are not infrequently strait-jacketed by antiquated political and administrative jurisdictions unable to properly finance and develop necessary community health services.

Under the pressure of these developments a groundswell of unease has been evident among public health workers and nonprofessional community leaders. This dissatisfaction with the current health scene is clearly evident in "A Critique of Community Public Health Services," the supplement to the current issue of the Journal. It is symptomatic of the ferment which is stirring those concerned with the health problems of the American community. The questions raised by the participants in the National Health Form deserve the thoughtful consideration of public health workers, for it is these questions that will concern us in the decades ahead. For this reason it is to be hoped that the supplement will find wide distribution and readership. If it stimulates thought and discussion on how best to meet the health needs of the community in an organized manner, it will have made a significant contribution to a fundamental problem.

Clearing House on Public Health Salary Information and Personnel Needs

Canadian Salary Study

The third revision of Recommended Qualification Requirements and Minimum Salaries for Public Health Personnel in Canada is published in the August issue of the Canadian Journal of Public Health. Here are described 47 grades of positions in 10 occupational classifications, each with recommended qualifications and recommended minimum salaries and annual increments up to maximum salaries.

Further, current salaries are reported for the 5,850 workers occupying these positions in Canada. Of the total, 46 per cent are nurses, 16 per cent are professional and technical laboratory personnel, 12 per cent each are physicians and sanitary inspectors, and 10 per cent are veterinarians. All other groups total about 5 per cent.

The report was prepared by a Committee on Salaries and Qualifications of Public Health Personnel of the Canadian Public Health Association at the request of the Dominion Council of Health, under the leadership of J. H. Baillie, M.D., area medical director, Bell Telephone Company of Canada.

It reviews that the report of the 1951 revision "noted that the increases recorded in salaries between 1948 and 1951 were not comparable with those received by other workers in Canada and would not compensate for the increased cost of living." It says further, "The 1956 survey indicates that there has been no marked increase in the number of physicians engaging in public health work during the past five years. This finding reflects the continuing shortage of physicians trained in public health and the trend toward the enlargement of health unit areas in order to utilize available personnel to the maximum. While there are outstanding examples of improvement in salary ranges, the over-all Canadian picture cannot be considered in any way competitive with other similar fields of endeavour nor attractive to a student contemplating professional public health service."

Pay Rises Pursuing Cost of Living

Pay rises pursuing but never catching up with rises in cost of living is the picture portrayed by material shown in "Government Standard" of July 12, 1957. This weekly newspaper of the American Federation of Government Employees gives excerpts from testimony presented to the House Post Office and Civil Service Committee in support of pay increases for government workers. Members of the committee, it is reported, "had high praise for the AFGE's thorough documentation of the case for a substantial pay raise."

The data excerpted in the Standard indicate that for the GS-7 worker, for example, salaries have increased 74 per cent between 1939 and 1957 while cost of living has risen 102 per cent. For groups of government employees in grades ranging for GS-3 to GS-11 the loss in real or buying power dollars during the same period varies from $50 annually for GS-3 to $640 for GS-11.

The details of the testimony can be found in the record of the hearings before the House Post Office and Civil Service Committee held the week of July 10, 1957. Copies of the Government Standard may still be available from the American Federation of Government Employees, 900 F St., N.W., Washington 4, D. C.

Medical Librarianship as a Career

A key person in the speedy transmission of the latest scientific discovery from the researcher to the practicing doctor and other researchers, upon which medical progress depends, is the medical librarian. Thus is described the job of this member of the health team in "A Career in Health: Medical Librarianship."

The article appears in Health, October, 1957, which is the monthly magazine of the American Osteopathic Association. It indicates a tremendous shortage of trained medical librarians, makes much of the service opportunities, indicates what are some of the important chores, outlines what training is needed, describes certification by the Medical Library Association (desirable but not compulsory for employment), and the general level of salaries.

The article, which was written by Margaret Cressaty, librarian of the College of Osteopathic Physicians and Surgeons in Los Angeles, is a valuable addition to the growing health career literature. Health, American Osteopathic Association, 212 East Ohio St., Chicago, Ill.

Recruiting Home Economists

Seven annual Home Economics recruitment pamphlets have been sent to the Clearing House by a member of the American Public Health Association. These seven pamphlets represent a long-range and persistent recruitment program. The 1951 stresses work with families and children as an incentive. The 1952 calls Home Economics "a career dedicated to better living." The 1953 stresses the teaching aspects both in classes and in any homes. The 1954 outlines the opportunities "for home economists in business." One of the smallest of the leaflets, the 1955 has as its theme, "Business Wants You, The Community Wants You, The Schools Want You" and suggests that you want a home for which home economics training prepares you. The 1956 pamphlet is devoted to a Home Economist Career in Social Welfare or Public Health. The 1957 pamphlet is entitled "For You a Double Future in Home Economics." The double career is as a home economist and a home maker. This pamphlet also has a list of sources of further information.

Each of these pamphlets is attractively presented in two colors with photographic and drawing illustrations.

Perhaps a set of these is available from the American Home Economics Association. They are variously priced, the 1957 being 25 cents; American Home Economics Association, 1600 20th St., N.W., Washington, D. C.

Virginia Recruitment Pamphlet

"It's Time to Choose Your Career" is the subject of the July, 1957, quarterly Bulletin of the Medical College of Virginia. It outlines, primarily for the high school student, the work, the satisfactions, qualifications, and training needed for 11 medical or related professions—medicine, dentistry, pharmacy, nursing, medical sciences, hospital administration, physical therapy, medical technology, x-ray technology, dietetics, and practical nursing. Public health is mentioned incidentally in a number of the occupations but not at all for medicine.

This is an effective factual booklet to help students decide whether to pick one of the 11 areas as a career. Medical College of Virginia, Richmond.

Nursing Personnel Policies Guide

The National League for Nursing has recently published "Guide on Personnel Policies for Employers of Public Health Nurses." This was prepared by a committee of both board members and administrative staffs of voluntary and

official agencies, staff of the League, and Charles Frasher, personnel consultant, American Public Health Association.

The guide discusses and suggests general principles with respect to every aspect of personnel administration in the field of nursing. For example, as to salaries it does not recommend what minimum, maximum, or median salaries should be in any given instance but rather indicates the determining factors in setting salaries. These are responsibilities of the position, preparation and experience needed to carry out the assignments, salaries paid to persons in positions requiring similar education and training, cost of living, and recommendations of the relevant State Nurses Association.

Department of Public Health Nursing, National League for Nursing, 2 Park Avenue, New York 16. $1.50.

Dental Hygienist Manpower

The eighth in the Public Health Service Series of Health Manpower Source Book deals with dental hygienists. It is based on a study designed to "provide for the first time an authentic body of information on the number and location of dental hygienists, characteristics and patterns of employment and the number of hygienists temporarily or permanently retired from the profession, as an objective basis for planning to meet the nation's need for this type of service." The American Dental Hygienists Association collected the facts by questionnaire; the analysis of data and preparation of the report were the responsibility of the Service.

About 14,000 reported dental hygienists received questionnaires. About 8,500 were licensed to practice. About 6,900 returned the questionnaire—practically a 50 per cent return.

There is here a wealth of detail both for the manpower planner and for the young person considering a dental hygienist career. There is also a detailed history of the 40-year growth of the dental hygienist profession. One could wish, however, for somewhat more extensive summary and interpretation of the detailed material.

Currently, as represented by 1954, about 900 dental hygienists are being graduated annually by the 34 schools training dental hygienists. More than half of the 6,900 returning questionnaires were not practicing, about 85 per cent of whom were neither employed nor seeking work, largely because of family responsibilities. Ten per cent were in positions outside their profession and 5 per cent were actively seeking employment as dental hygienists.

The earlier manpower source books have related to physicians, nursing personnel, medical social workers, medical record librarians, and dentists. Two others, respectively, report state and county data on 16 health occupations and industry and occupation for the same groups.

Wayne County Salary Plan

The Civil Service Commission has published the "Official Salary Plan for Wayne County, Michigan" as it was in effect on March 18, 1957. Minimum salary, intermediate salary steps, and maximum salary are shown for hundreds of class titles, among them public health director and assistant director, public health physician, three grades of public health engineers, four of public health nurses, two of public health educators, and three of public health sanitarians. Numerous other titles might apply to workers in public health departments.

The plan of some 40 pages of listings is presumably available from the Wayne County Civil Service Commission, City-County Bldg., Detroit. No information as to cost.

Credit Lines

The Journal cannot furnish copies of items mentioned in Credit Lines. Please send requests to the addresses given.

Seeing a Situation's Opportunities

In the current emphasis on influenza control activities, the Equitable Life Assurance Society's Medical Department sees an opportunity for wider teaching about health matters. With full confidence that the Public Health Service, state and local official and voluntary health agencies, and the professional societies are doing the job of educating the public about the possible "flu" epidemic and the vaccine situation, the Equitable believes this is the time to capitalize on public interest in health.

Hence the Medical Department is offering, particularly to health administrators and health educators, "materials to back up influenza control activities." This is a "teachable moment," says the offer, "not only in terms of vaccination and communicable disease control, but also with respect to basic individual and family responsibility for health behavior."

With a self-mailer request form easily filled out the five "Assurance of a Fuller Life," Booklets and Leaflets (A.J.P.H. 47:7, p. 879) are described and illustrated. These are backed up by 25 medical department posters related to the "Fuller Life" subjects. There is also a unit on Nursing and First Aid consisting of a book, leaflet, and poster.

In addition, a set of suggested feature releases is provided. Their subjects are "The Food You Eat Becomes You," "Preparing the Home," (particularly in relation to unexpected illness), "The Rest Is Up to You," "Good Home Management Eases Illness," and "Home Care for the Sick." There is much here that is applicable to a "flu" epidemic if it comes, but whether it comes or not, the renewed public interest is being exploited for better all-round health education.

The Family and the Mental Patient

A booklet prepared by the New York State Department of Mental Hygiene might well stimulate a similar publication in other state departments of mental hygiene or mental hygiene divisions of state health departments. "Give Them Your Hand" explains what happens to the patient in the mental hospital and the role of the relative in his treatment and recovery. Necessary rules and regulations and their reasons are explained. The theme is that "the hospital and the family must work together to make the patient well."

A copy of the booklet is given to relatives of newly admitted patients. New York State Department of Mental Hygiene, Albany. No information on out-of-state distribution.

Intercounty Community Problems

Not too long ago dealing with many problems on a village basis was "horse and buggy." Now there are many signs that single city or single county solutions may also soon be "horse and buggy." At any rate six counties in Michigan, centering around Detroit and bordering three of the Great Lakes, have organized a Supervisors Inter-County Committee. These counties include 52 per cent of the state's population, have 58 per cent of the state's assessed valuation, and 44 per cent of the members of the state legislature.

This committee has recently issued a pamphlet—"How Six Michigan Coun-

ties Are Solving Common Problems." It is a report about the "cooperation on the part of the six counties" . . . "an action outline of a system, already in existence, by which all of us can successfully tackle area-wide problems while preserving—even strengthening—local governments."

Among the problems with which the committee is dealing and about which it makes recommendations to the separate county supervisors are the traffic problems of the area, recreation, port facilities, sewage and waste disposal, and water supply.

The pamphlet has a ring binding designed for additions so that it may be used as a progress report and continuing reference book. It was published in the public interest by the Area Development Division of the Detroit Edison Company, from which it is presumably available. Detroit 26.

Occasional Tension Is Normal, But—

"How to Deal With Your Tensions" is intended to put worry and tension in its proper place. An occasional bout is normal and may even be salutary. The time to look for possible coming mental illness and seek professional help is when emotional upsets become frequent, intense, and long-lasting.

The booklet was prepared by George S. Stevenson, M.D., medical consultant, and Harry Milt, public information director, National Association for Mental Health, as a part of a year-round campaign of public information sponsored by the Advertising Council in behalf of NAMH. Cards, offering free copies, have been placed in street car, bus, and subway, by national transportation advertising agencies as a public service. The booklet carries the endorsement of Robert H. Felix, M.D., director of the National Institute of Mental Health.

National Association for Mental Health, 10 Columbus Circle, New York 19. Single copies presumably free.

Disney Safety Series

The last three of five Walt Disney safety education films have recently been released. The series stars Pinocchio's famed conscience, Jiminy Cricket. They are in animated color, 16 mm, running eight minutes. Jiminy Cricket sings and dances as he conducts a safety contest in each film, pointing out meanwhile proper procedures for pedestrians, swimmers, and anyone just "having fun."

The titles of the five are "I'm No Fool With a Bicycle," "I'm No Fool With Fire," "I'm No Fool as a Pedestrian," "I'm No Fool in Water," and "I'm No Fool Having Fun." The last three are the latest to appear.

Rental or lease/purchase information from Walt Disney Productions, 16 mm Division, Burbank, Calif.

40 Year Industrial Health Research

In 1914 the Industrial Hygiene, now the Occupational Health, Section of the American Public Health Association was established. The same year the Public Health Service established the Office of Industrial Hygiene and Sanitation and soon after began its research program in occupational health which has continued to the present day.

To summarize—and perhaps celebrate—these "40 years of service," "The Public Health Service in Occupational Health" was published and distributed early in 1957. In that period studies have been made of chest diseases in mining, granite, cement, and textile industries; lead poisoning in various industries, radium poisoning in the watch industry; pneumonia in the steel industry; lung cancer in the chromate producing industry; industrial fatigue, illumination, noise, and the industrial dermatoses. But the program has expanded beyond research into promotion of preventive health services in in-

dustry and training and consultation services.

By way of emphasizing the changing nature of its services a study of health hazards in uranium mining currently under way is described to illustrate the clinical-engineering approach to job-related health programs.

The 16-page booklet, PHS Publication No. 490, is available from the Government Printing Office, Washington 25, D. C.; 20 cents.

Atmospheric Pollution and Health

Publication of "Annotated Bibliography, The Effects of Atmospheric Pollution on the Health of Man, 1957" will help in arriving at a clear understanding of the relationship of general atmospheric pollution to the health of man. Such an understanding is still lacking in spite of many efforts to establish the exact relationship. Prepared by the Kettering Laboratory of the Department of Preventive Medicine and Industrial Health, University of Cincinnati College of Medicine, almost 800 articles are presented in more than abstract form. In most cases original publications were consulted. An author and subject index are cross-referenced with the annotations. John J. Phair, M.D., professor of preventive medicine, University of Cincinnati School of Medicine, was responsible for the over-all preparation of the report. He is also chairman of the APHA Subcommittee on Health Aspects of Air Pollution which assisted in the project. A limited number of copies available free of charge from the Kettering Laboratory, Cincinnati, Ohio

Medical Society and Public Health

"The County Health Department" is an attractively put together pamphlet by the Educational and Scientific Trust of the Pennsylvania State Medical Society. It is made up of four basic articles on the county health department in Pennsylvania, which are believed "to be of value to any organization involved in either a survey of existing facilities in their county or one that is involved in an educational campaign aiming toward the establishment of a county health department." Their relevance is not limited to Pennsylvania.

The four articles first appeared in the Pennsylvania Medical Journal. The Educational and Scientific Trust is the Society's mechanism for supervising and administering educational and scientific projects in the field of medicine. Currently it is concentrating on public health with "its first project policy the encouragement of the medical profession in this modern public health concept" (the county health department).

The Pennsylvania Medical Society, particularly its Committee on Preventive Medicine and Public Health—Pascal Luchessi, M.D., chairman—has been active in the revitalization of the state's public health practice and facilities. The Keystone study of 1948, the new public health law of 1951, the employment of a trained medical health officer to head the State Health Department and the application of the Merit System in employing its personnel, the organization of four county health departments, surveys and other activities looking toward departments in numerous other counties—in all of these the Medical Societies have had a vital and continuing part.

The Educational and Scientific Trust, Pennsylvania Medical Society, 230 State Street, Harrisburg. Free.

Bingham Program Briefly Described

A brief, clear description of the Bingham Associates Fund program is found in the October 1 issue of Pfizer's bimonthly Spectrum. This is the program by which 46 towns between the top of

Maine and Nantucket Island are linked together in a regional hospital plan. Through this program persons living as far away as 300–400 miles from the nearest university medical center enjoy educational, consultant, and diagnostic services of metropolitan medicine.

From the key units in the program—Boston's New England Medical Center, the Tufts School of Medicine, and the now quarter-of-a-century-old Bingham Associates—is a constant two-way flow of medical traffic; in one direction rural doctors for courses and conferences, referral patients with difficult problems for diagnosis or surgery, paramedical employees for special training; in the other, lectures, consultants, reports.

In one page of "tight" writing and three pages of illustrations is achieved a well rounded background and history of the program that gives "the potato, pea, poultry, pulp-wood and paper people of Aroostook County the advantages of 'big-city medicine.'" Pfizer Spectrum, Pfizer Laboratories, 630 Flushing Avenue, Brooklyn 6, N. Y.

A New Magazine for Physicians

MD, Medical News Magazine, began monthly publication in January, 1957, "to satisfy the physician's curiosity about the vast, rich tapestry of medicine and of life." It is divided into three sections, "World of Medicine," "Medicine in the World," and "Medicine in the Arts." Felix Marti-Ibanez, M.D., is the editor-in-chief, publisher is MD Publications, Inc., 30 East 60th St., New York. Free to practicing physicians; $7.50 annually to others.

Metropolitan's New Pamphlets

"Food for the Family," "Ways to Teach Nutrition in Industry" and "For a Prettier, Peppier You," are among Metropolitan's 1957 nutrition education materials. The first is told in imagined family situations that sound as though they might have happened; the second is designed for doctors and nurses in industry and includes a list of other material available; the third uses the teenage miss's concern with her looks to drive home some basic food facts.

Also available is a new list of publications on health and safety available from the Health and Welfare Division, Metropolitan Life Insurance Company, One Madison Avenue, New York 10.

Worth Acquiring

"Dental Health for Pre-School Children" is a simple leaflet in color giving the parents the facts about the care of children's first and permanent teeth. The elements of care are tooth brushing, food, fluoridation, and regular visits to the dentist, the first of which should be shortly after all the first teeth have erupted. State Board of Health, Madison 2, Wis.

"By Easy Stages" is a brief guide for annual reporting by health associations. Prepared by the State Charities Aid Association of New York it has reportedly had some rather enthusiastic responses. Among the enthusiasts is the National Publicity Council for Health and Welfare which has included the guide in its September packet of illustrative material sent to its members.

What an annual report should do, description of the eight stages ending in distribution, and a suggested form for the financial statement are included. A cover in color with humorous pencil drawings provides the only leit-motif. State Charities Aid Association of New York, 105 E. 22nd St., New York 10. Free.

"Heedless Horsepower" is the 1957 Book of Street and Highway Accident Data, representing the contribution of the Travelers Insurance Companies to automobile accident prevention educa-

tion. As has come to be the pattern the stark figures are sauced with grimly funny cartoons. That the driver and his attitude rather than the car are key factors is indicated by the fact that 97 per cent of the cars involved in accidents—fatal or nonfatal—were in apparently good condition and that the drivers involved had had a year or more of driving experience.

This booklet which describes "heedless horsepower" as "the chronic disease of the automobile age" should be widely used in highway accident prevention programs and as footnotes to high school driving courses. The Travelers Insurance Companies, Hartford, Conn.

"Advisory and Coordinating Mechanisms for Federal Research and Development, 1956–1957" details the entire picture of the "public-interest safeguards" that are built into federally supported programs of research and development. Listed for every federal department or agency are the advisory panels, committees, or consultant groups, which "insure that research programs are adequately coordinated and balanced, and conceived in the light of the best available technical judgments."

Government Printing Office, Washington 25, D. C. No information as to cost.

Annual Reports

Public Health Federation, 1956, is the 39th annual report of the Health Division of the Cincinnati Community Health and Welfare Council and the first report of the new executive secretary, Gertrude Morris. In a convenient ring binder, it is essentially the reports of the 15 divisional councils that make up the Federation. During 1956 the Child Hygiene Council was dissolved to become a part of the Children's Federation organized with a number of other organizations under the Community Health and Welfare Council.

A study of Hamilton County's Nursing Service has resulted in making nursing service available throughout the county. Other steps are being taken to make such service adequate and to extend it across the river to Kentucky.

The report says that "1956 may be looked upon as a fact finding year," whereas 1957 "may be the year for follow up of study recommendations and continuing progress toward reaching goals."

"The Turning Point" is the 1956 annual report of the National Association for Mental Health which describes itself as the "only national citizens' organization devoted exclusively to the total fight against mental illness." The "turning point" refers to the turndown in the number of mental hospital resident patients in 1956, a development foreshadowed by the much slowed down increase in the number in 1955.

The factors back of this turndown are analyzed—new treatments, "more treatment for more persons," the work of the Joint Commission on Mental Illness and Health, new knowledge, and the new ally in the Advertising Council which has helped to shape new attitudes about mental illness.

NAMH ended 1956 with 550 state and local affiliate associations, 10 per cent of which were newly organized during the year. Of the more than three-quarters of a million dollars expended during the year, 16 per cent was devoted to research and study.

National Association for Mental Health, 10 Columbus Circle, New York 19.

Books and Reports

All reviews are prepared on invitation. Unsolicited reviews cannot be accepted.

Dairy Microbiology—By Edwin M. Foster; F. Eugene Nelson; Marvin L. Speck; Raymond N. Doetsch; and Joseph C. Olson, Jr. Englewood Cliffs, N. J.: Prentice-Hall, 1957. 492 pp. Price, $7.50 text, $10.00 trade.

This well rounded book brings together a wealth of information on the microorganisms found in dairy products—their classification and physiological groupings, methods of destroying or preventing growth of harmful and undesirable types, and methods of stimulating growth and activity of microorganisms essential in the manufacture of fermented dairy products and cheeses. In the words of the authors: "It is an interpretative work, one that stresses the broad generalizations that can be drawn from information in the literature."

Although no chapter of the book is devoted solely to diseases transmitted by milk and dairy products, the authors have developed this phase of the subject throughout the book in appropriate locations. By means of concise reviews of several diseases that have been associated with milk, effective methods of preventing transmission of the causative agent have been described.

Fundamental principles of the time-temperature relationships in the destruction of microorganisms by heat and the practical applications in pasteurization processes have been clearly and logically developed in the chapter on "Destruction of Microorganisms" and in the one on "Ice Cream and Related Frozen Products." Some of the regulatory aspects have been discussed in other locations.

Sources of contamination of milk from the moment the milk is secreted in the udder through the various stages of processing to the final product in the package are discussed in order to emphasize the basic principles of good sanitation in milk production and processing. Those concerned with sanitary quality control of milk will find that this volume brings together in convenient form interpretative information which has been widely scattered.

The excellent photographs, diagrams, flow sheets, graphs, and tabular material contribute much to the clarity and interest of the various presentations. Sanitarians, laboratorians, industry field men, plant operators, and others charged with the responsibility of providing the public with safe, wholesome dairy products will find a study of this volume both stimulating and rewarding.

ROBERT P. MYERS

The Freezing Preservation of Foods. Volume 1—Freezing of Fresh Foods—By Donald K. Tressler and Clifford F. Evers (3rd ed.). Westport, Conn: Avi Publishing Co. (7 Taylor Place), 1957. 1240 pp. Price, $18.00.

This is an extensively revised and enlarged edition of a basic reference text covering in detail the historical background and technical aspects of food preservation by freezing. Rapid expansion of the frozen food industry since the publication of the second edition in 1946 has necessitated the issuance of this new edition in two volumes. The first volume is devoted to the freezing of fruits, vegetables, and juices. The second volume (to be published in June) will be concerned exclusively with the freezing of prepared or cooked foods.

This is primarily a reference text for use principally by persons associated with the food industry. The two authors

have had wide experience, and have been aided by over 100 collaborators who are specialists in the various phases of the subject to which they have contributed. Among the completely new chapters in this edition are those on vacuum concentration and freezing of fruit juice concentrates, dehydrofreezing of fruits and vegetables, the preparation and freezing of game. Chapters which have been rewritten or greatly expanded are those on frozen food retail cabinets, plant sanitation, home freezing, and storage equipment. Transportation, storage, and marketing of frozen foods are discussed in detail. The chapter on nutritive values of frozen foods has been substantially enlarged by the inclusion of recent findings of a comprehensive program sponsored by the National Association of Frozen Food Packers.

Bibliographies included in each chapter are extensive and have been brought up to date. Numerous charts and tables contribute to the usefulness of the book.

K. G. DYKSTRA

The Municipal Year Book, 1957—Edited by Orin F. Nolting and David S. Arnold. Chicago, Ill.: International City Managers' Association (1313 East 60th St.), 1957. 581 pp. Price, $10.00.

It is appropriate that public health workers generally should be reminded of this 24th volume in the series of the Municipal Year Book covering 1957. This series is well known to professionals in public health including, as it does, much factual information about governmental units, municipal personnel, municipal finance, municipal activities, and directories of officials.

Of particular interest in our field are the digests of the developments in public welfare, housing and redevelopment, planning and zoning, schools and education, etc. The chapter on public health is again written by Roscoe P. Kandle, M.D., deputy commissioner of health, New York City Department of Health, and is excellent.

It is well to recognize the changes that have taken place in the finances of cities over 25,000 population from 1942 to 1955. The expenditures for health and hospitals during this period have increased from $156 million to $546 million. This category is higher than the expenditures for fire departments and only slightly lower than that for police and highways and sanitation.

This is a recommended volume.

REGINALD M. ATWATER

Baffling Eyes of Youth—By John K. Donahue. New York: Association Press (291 Broadway), 1957. 249 pp. Price, $3.50.

This small volume, which received an award as a Leadership Book in the Association Press Contest, gives a first-hand, vivid description of experiences with several boys who were members of gangs in St. Paul. The author, the chief probation officer in one of the counties in St. Paul, worked with these boys through their recreational activities and recorded the actual experiences of each individual boy and his involvement with the gang. The early histories date back to the 1930's and follow the boys through World War II. Mr. Donahue recognized that the basic needs of these boys were "something to do, something to love, and something to hope for." The methods used are suggestive for work with delinquents today and are being applied in many areas.

Mr. Donahue describes how he gained the confidence of the boys and helped them to greater social maturity. He illustrates the frequent regression in behavior which was inevitable if these boys were to progress. Effective use was made of community resources to help them with their varied problems. The biography of gang life reads like a story as it unravels the histories of the individuals. Professional under-

standing, imagination, patience, and skill are clearly portrayed, and beyond these the author's conviction in the potentialities of some of these boys for ultimate rehabilitation.

This is a vivid presentation of the culture of gangs and suggests useful methods for community agencies which are attempting to help adolescents in their struggles to adjust in an adult society. ELIZABETH P. RICE

Williams-Waterman Fund for the Combat of Dietary Diseases. A History of the Period 1935 through 1955—By Robert R. Williams. New York: Research Corporation (405 Lexington Ave.), 1956. 120 pp.

In this history of the first 16 years of active operation of the Williams-Waterman Fund, the retiring chairman of the Fund summarizes the work undertaken and discusses the relationship of the program to some of the major nutritional problems of the world.

The opening chapter describes the formation of the Fund, which was established by an agreement between the three inventors of the commercial synthesis of thiamine, Robert R. Williams, Robert E. Waterman, and Edwin R. Buchman, and the Research Corporation.

An account of the research which provided a basis for the Fund follows. The author traces the course of his work on thiamine, begun in Manila in 1910 and continued later in Washington, D. C., New Jersey, and New York. Working in their spare time, and for many years without adequate facilities, Dr. Williams and his associates isolated the vitamin in 1933. Their method for commercial synthesis of thiamine, developed by June, 1936, was patented in 1942.

The following three chapters refer to some major projects supported, problems encountered in putting the product of the thiamine research to work for public benefit, and factors affecting the modification of food habits.

The last two chapters review the status of enrichment, some economic, social, and political factors affecting the application of enrichment in other continents, and the world problem of the most prevalent form of protein malnutrition, kwashiorkor.

Lists of grants for 1940–1956 and of the names of grantees and co-workers follow the main text.

This volume should be of particular value to those interested in the administration of research and educational programs, and of general interest with respect to dietary problems past, present, and future. HORACE L. SIPPLE

Radiological Health Handbook—Compiled and edited by Simon Kinsman assisted by F. D. Anderson; R. S. Cleveland; B. L. Harless; and C. F. Henke. U. S. Department of Health, Education and Welfare, Public Health Service, Bureau of State Services, Division of Sanitary Engineering Services, Robert A. Taft Sanitary Engineering Center, Cincinnati, Ohio. Washington, D. C.: Dept. of Commerce, Office of Technical Services, 1957. 355 pp. Price, $3.75.

A comparison of the enlarged latest issue of this well known and widely useful handbook with the smaller earlier editions starting in 1951 strikingly indicates the accelerating impact of the radiological sciences upon public health practice and research. The volume in its latest form consists of 355 pages of definitions, mathematical and physical tables, graphs, and nomograms carefully organized and indexed. The main subdivisions of the book include: Glossary; Physical, Chemical, and Mathematical Data; Radioisotope Decay and Radioassay Data; Radiation Protection Data; and Table of Isotopes. The last item constitutes a complete compilation

of the most recent data of Hollander, Perlman, and Seaborg of the Radiation Laboratory of the University of California pertaining to salient properties of all known radioactive and stable isotopes of the elements. Access to this table in the convenient form presented is a sine qua non for research and other investigation in the field of radiological health.

The reviewer was especially impressed by the extended and improved glossary of terms used in the radiation sciences. This introduction to the technical language will be invaluable to the public health worker who is turning from conventional areas to investigation in the newer fields that are opening as the atomic age progresses. Other notable improvements and extended developments are to be found in the sections on Standard Man and his attributes, on the maximum permissible concentrations of radioisotopes in the body, air, and water, and in the useful collection of conversion factors for dimensional quantities.

Scientists, engineers, and administrators in the state and federal agencies, universities, industries, and local authorities will agree that much credit is due to Dr. Kinsman and his colleagues at the Taft Center and to James G. Terrill, Jr., chief of the Radiological Health Program of the PHS, and members of his staff in Washington for the success of their efforts in collecting and organizing the vast amount of information between the covers of this handbook. Undoubtedly, the demand for the new edition will continue to be as great as it has for past editions.

HAROLD A. THOMAS, JR.

Medical Officers of Health: 1848 to 1855. An Essay in Local History—By C. Fraser Brockington. London: Hodgetts Ltd. (72/78 Fleet St.), 1957. 51 pp. Price, 10s or $1.50.

One of the major achievements of the sanitary reform movement in 19th century England was the creation of the medical officer of health. The example set by Liverpool with the appointment of W. H. Duncan in 1847 was followed by the City of London in 1848 when it appointed John Simon to a similar post. Between 1848 and 1855 a number of physicians were appointed to similar positions in other communities. Few people have known much about these doctors, and Dr. Brockington's little book throws light on these men and their activities. Anyone who wants to know what it was like to be a health officer a hundred years ago can do no better than to turn to this study. In addition to a discussion of the Local Boards of Health and the health officers, the book contains a report on the sanitary condition of Darlington in 1851 by Dr. S. E. Piper, the M.O.H., as well as several appendixes giving the duties of health officers, the dates of constitution of local boards of health, and a list of medical officers of health with biographical details. This book should be available in every school of public health.

GEORGE ROSEN

Medical Progress 1957. A Review of Medical Advances During 1956—Edited by Morris Fishbein. New York: McGraw-Hill, Blakiston Division (330 West 42nd St.), 1957. 367 pp. Price, $6.00.

How can the public health physician keep reasonably abreast of the extraordinary developments in the entire field of medicine while he is practicing his specialty of public health? This volume provides one of the answers. The editor considers the year 1956 to have been marked by two specially outstanding developments, namely, the new uses of the tranquilizing drugs and a fresh approach to many conditions through the biochemistry of the cell.

This is the sixth volume in the annual series and as was the case in its predecessors covers the principal areas

of medical and surgical practice. There are well known names among the contributors, including Morris Fishbein in medicine, Elliott P. Joslin in diabetes, and Fredrick J. Stare in nutrition. This is not a textbook of medicine but it is a successful effort within its declared purpose. REGINALD M. ATWATER

Meat Hygiene—By V. E. Albertsen, et al. World Health Organization Monograph Series No. 33. New York: Columbia University Press (2960 Broadway), 1957. 527 pp. Price, $10.00.

This monograph is a compilation of the experience and knowledge of the leaders in the field of meat hygiene throughout the world. It deals with practical health problems and covers ante-mortem and post-mortem aspects of the meat industry. There is information relative to the training of meat inspectors which should be most useful to administrators of veterinary public health and associated programs involving meat inspection practices. Current meat hygiene practices of European countries are discussed and special problems with respect to the tropics are brought to the fore.

The monograph points out that the farmer has a part in providing the consumer with safe and wholesome meat. This is the case with regard to diseases, such as trichinosis and beef tapeworm, which are transmissible to human beings. These parasites are most readily controlled by proper feeding and control measures at the farm level.

Of particular importance is the chapter devoted to the epidemiology of meatborne diseases by Dr. C. E. Dolman. It serves as an introduction for the entire monograph. This chapter raises many points of significance, such as the need for data from physicians to meat inspection authorities with respect to the 27 million world cases of trichinosis, 39 million world cases of beef tapeworm, and three million cases of pork tapeworm among numerous other meatborne infections.

The volume contains detailed annexes covering laboratory technics, meat hygiene regulations, and design of abattoirs. The monograph is a rich collection of data which can lead to a valuable evolutionary change of meat inspection practices in many areas of the world, including the United States. The reviewer recommends its usefulness for medical health officers, veterinary public health personnel, meat hygienists, epidemiologists, sanitarians, and students. OSCAR SUSSMAN

Governmental Problems in the Chicago Metropolitan Area—Edited by Leverett S. Lyon. Chicago, Ill.: University of Chicago Press (5750 Ellis Ave.), 1957. 283 pp. Price, $8.00.

Development of normal governmental services and facilities of almost any large city in the United States goes beyond the jurisdictional limitations of the city. The metropolitan area of Chicago is an example of the interrelationships existing in governmental activities between a large central city and adjacent satellite areas. When considering the provision of additional refuse disposal services, instituting new public welfare programs, considering public responsibility in the field of medical care, or providing for issues in metropolitan area fire protection, questions arise as to the most efficient means for accomplishing the desired ends. Can government arrangements, particularly those which would broaden the area of jurisdiction beyond that now held by any local entity, provide services more economically and efficiently?

The Northeastern Illinois Metropolitan Area Local Governmental Services Commission, created by the Illinois Legislature in 1955, was organized to study the Chicago metropolitan area and at-

tempt to provide an answer to the question mentioned previously. A series of monographs, each prepared by one or more experts in a particular area of concern, comprises the volume. Each monograph or chapter attempts (1) to analyze the significant national conditions to which the governmental problems of the northeastern Illinois metropolitan area are related, (2) to depict in general terms Chicago Metropolitan Area problems, and (3) to present an analysis in area terms of a range of governmental services. The major concerns of any local governmental area are considered. These go from a general discussion of the metropolitan area problem to surface drainage, school buildings and educational problems, public health, police and fire, as well as revenue problems. Included in the group of experts called upon to prepare chapters are strong representatives of public health. We see such names as Louis R. Howson, Samuel A. Greeley, Howard J. Shaughnessy, and Alexander Ropchan. Victor Jones discusses "What Certain Other Metropolitan Areas Have Done."

The basic study is not new. However, the approach is new. Valuable information concerning the present metropolitan Chicago area facilities and needs are presented. Imaginative estimates are made of future needs and methods for meeting them. Excellent illustrative material is included in the report. The photography is of a high quality. FRANCIS B. ELDER

BCG Vaccination Against Tuberculosis—By Sol Roy Rosenthal. Boston, Mass.: Little, Brown (34 Beacon St.), 1957. 389 pp. Price, $7.50.

This book by the director of the Institute for Tuberculosis Research of the University of Illinois and the chief proponent of BCG vaccination in the United States is a quite complete and almost unbiased review of the subject. The contributions by Dr. Guerin on the early history of BCG, by Weil-Hallé on oral vaccination, and by Wallgren on intradermal vaccination add greatly to the interest, balance, and value of the whole. The learned, detailed, and sometimes repetitious discussion of technical matters in chapters IV through XVII should be required reading for all who venture to attack this method of protecting heavily exposed segments of the world population and will be useful to all those who use BCG. The chapters on immunity, other vaccines, and history will be of special interest to phthisiologists and bacteriologists. The final chapter upon the place of BCG vaccination in tuberculosis control is an excellent summary of the present situation in this field of public health and should be read by all health officers and other physicians responsible for such control. For those with such responsibilities and for libraries in medical schools, health departments, and tuberculosis associations this book is especially recommended.

JULIUS L. WILSON

Getting Ready for Parenthood—By Mario A. Castallo. New York: Macmillan (60 Fifth Ave.), 1957. 192 pp. Price, $3.95.

This volume has two characteristics which set it in a somewhat different framework from most of the books written by physicians for expectant parents. The first of these is that there is a positive mental health approach. Dr. Castallo keeps this in mind during pregnancy, labor and delivery, and after the parents bring the baby home from the hospital. He not only discusses the physiologic, but the psychologic adjustments as well. The second departure is in Chapter 12 on "Natural Childbirth and Rooming-In." The author called on Dr. Paul A. Bowers and Miss E. Pauline Shenk to write this chapter after their

experiences at Jefferson Hospital in Philadelphia since 1947.

The basic concept for physiologic birth with psychologic support is based on the work of Jacobson and Read. However, there are adaptations of the Read technic that make it much more acceptable to those practicing obstetrics in the United States.

It is good to see the doctor taking the husband as well as the wife into the obstetrical team. Furthermore, the importance of training the obstetrical nurses so that they can give sympathetic and understanding support is highly desirable.

Three reasons given for rooming-in are: (1) ". . . a means of reducing contagious diseases in the central nursery; (2) "gives the new mother the experience in caring for her baby at the time she needs it most; and (3) ". . . the awareness in obstetrical thinking of the emotional needs of the child and his parents. . . ." Castallo says, ". . . the doctor is able to offer a more personal and individual type of care to his patients. He gets to know the family as a unit . . ."

We think it splendid that the multiprofessional approach to peoples' problems is recognized in these words: "Most doctors today accept the thought that modern medical practice must of necessity be integrated into the total life picture and that advancement in the social sciences are quite as important to good medicine as those in the physical and biological sciences."

There are the usual good generalizations about nutrition. Essential or "must" foods are clearly identified, and for those who need weight control there are five rules which should assist them.

Division headings within chapters, cross-references to other sections, and a good index make the book attractive and useful.

DAVID B. TREAT

Books Received

Listing in this column acknowledges the receipt of books and our appreciation to the senders. Space and the interests of readers will permit review of some, but not all, of the books listed.

ATOMIC ENERGY AND AGRICULTURE. C. L. Comar. Washington, D. C.: American Association for the Advancement of Science, 1957. 460 pp. Price, $9.50 or $8.25 to AAAS Members.

A BABY IS BORN. The Picture Story of Everyman's Beginning with Captions in English, French, and Spanish. New York: Maternity Center Association. 66 pp. Price, $6.00.

BLOOD PRESSURE IN A POPULATION, THE. Johs.Boe, et al. Bergen, Norway: A. S. John Griegs Boktrykkeri, 1957. 336 pp.

BUILDING AND EQUIPMENT SANITATION MAINTENANCE-PRINCIPLES AND PRACTICES. J. Lloyd Barron and Albert J. Burner. New York: Association of American Soap & Glycerine Producers, 1957. 61 pp. Price, $.75.

CHEMICAL ANTHROPOLOGY. Icie G. Macy and Harriet J. Kelly. Chicago, Ill.: University of Chicago Press, 1957. 149 pp. Price, $3.75.

CITADEL, MARKET AND ALTAR. Spencer Heath. Elkridge, Md.: The Science of Society Foundation, 1957. 259 pp. Price, $6.00.

CLASSIFIED BIBLIOGRAPHY OF GERONTOLOGY AND GERIATRICS, A. Supplement One—1949–1955. Nathan W. Shock. Stanford, Calif.: Stanford University Press, 1957. 525 pp. Price, $15.00.

CURRENT MEDICAL RESEARCH. A reprint of the articles in the Report of the Medical Research Council for the year 1955–1956. London, England: Her Majesty's Stationery Office, 1957. 56 pp. Price, 2s.6d.Net.

DECADE OF MEDICAL RESEARCH, A. 1947–1957. Los Angeles, Calif.: Los Angeles County

Tuberculosis and Health Association, 1957. 114 pp. Limited Distribution.

EDUCATION OF YOUNG CHILDREN, THE. D. E. M. Gardner. New York: Philosophical Library, 1957. 118 pp. Price, $2.75.

EDUCATORS GUIDE TO FREE SLIDEFILMS (Ninth Annual Edition 1957). Randolph, Wis.: Educators Progress Service, 1957. 204 pp. Price, $5.00.

ELEMENTARY TEACHERS GUIDE TO FREE CURRICULUM MATERIALS (14th ed.). Randolph, Wis.: Educators Progress Service, 1957. 319 pp. Price, $5.50.

FADS AND FALLACIES IN THE NAME OF SCIENCE. Martin Gardner. New York: Dover Publications, 1957. 363 pp. Price, $1.50.

FINANCING HEALTH COSTS FOR THE AGED. Report on the New York State Conference, 1956. Albany, N. Y.: Office of the Special Assistant, Problems of the Aging, 1956. 242 pp. Price, $2.00.

FREEZING PRESERVATION OF COOKED AND PREPARED FOODS. Vol. II. Donald K. Tressler and Clifford F. Evers. Westport, Conn.: Avi Publishing Co., 1957. 559 pp. Price, $10.00.

FROM WITCHCRAFT TO WORLD HEALTH. S. Leff and Vera Leff. New York: Macmillan, 1957. 236 pp. Price, $4.50.

FUNCTIONS AND EDUCATION OF MEDICAL RECORD PERSONNEL, THE. Antonio Ciocco, et al. Pittsburgh, Pa.: University of Pittsburgh Press, 1957. 78 pp. Price, $2.00.

GLOSSARY OF TERMS IN NUCLEAR SCIENCE AND TECHNOLOGY, A. New York: American Society of Mechnical Engineers, 1957. 188 pp. Price, $5.00.

HEREDO-RETINOPATHIA CONGENITALIS (English Translation). A GENETICAL-STATISTICAL STUDY. Carl Henry Alstrom and Olof Olson. Lund, Sweden: Berlingska Boktryckeriet, 1957. 178 pp.

HOSPITAL PATIENT SURVEY. Howard A. Rusk. New York: Goldwater Memorial Hospital, 1956. 146 pp.

HOSPITALS AND PUBLIC HEALTH NURSING SERVICES PLAN BETTER PATIENT CARE. New York, N. Y.: National League for Nursing, 1957. 39 pp. Price, $1.00.

INTRODUCTION TO BIOSTATISTICS. Huldah Bancroft. New York: Hoeber, Medical Book Department, 1957. 210 pp. Price, $5.75.

MANKIND AGAINST THE KILLERS. James Hemming. New York: Longmans, Green, Junior Books Dept., 1957. 231 pp. Price, $3.50.

MEDICAL CARE NEEDS AND SERVICES IN THE BOSTON METROPOLITAN AREA 1957. Leonard S. Rosenfeld, et al. Boston, Mass.: United Community Services of Metropolitan Boston, 1957. 147 pp.

NARKOLEPSIE A HYPERSOMNIE S HLEDISKA FYSIOLOGIE SPANKU (NARCOLEPSY AND HYPERSOMNIA FROM THE STANDPOINT OF THE PHYSIOLOGY OF SLEEP). Mudr Bedrich Roth. Praha, Sokolska, Czechoslovakia: Statni Zdravotnicke Nakladatelstvi, 1957. 332 pp.

OVER MY DEAD BODY. June Opie. New York: E. P. Dutton, 1957. 265 pp. Price, $3.50.

PATHOLOGICAL HISTOLOGY. Robertson F. Ogilvie (5th ed.). Baltimore, Md.: Williams and Wilkins, 1957. 482 pp. Price, $3.75.

PSYCHOPATHIC PERSONALITIES. Harold Palmer. New York: Philosophical Library, 1957. 179 pp. Price, $4.75.

SEX AND THE CHRISTIAN LIFE. Seward Hiltner. New York: Association Press, 1957. Price, $1.00 (paper bound).

SLOW LEARNER, THE. M. F. Cleugh. New York: Philosophical Library, 1957. 186 pp. Price, $3.75.

SOCIAL CASEWORK: A PROBLEM-SOLVING PROCESS. Helen Harris Perlman. Chicago, Ill.: University of Chicago Press, 1957. 268 pp. Price, $5.00.

STUDENT-PHYSICIAN, THE. Introductory Studies in the Sociology of Medical Education. Edited by Robert K. Merton, et al. Cambridge, Mass.: Harvard University Press, 1957. 360 pp. Price, $5.00.

A Selected Public Health Bibliography with Annotations

Recalcitrant Consumptives—"the Conference deplores the use of compulsion as a substitute for adequate preventive and therapeutic measures of tuberculosis control. . . ." "It recognizes however that in spite of such measures, occasional use of compulsion may be necessary in order to implement the total program." The conferees, who listened to the pros and cons of compulsion, did not come to general agreement about what to do with the recalcitrants.

ANON. Conference Report on Protective Isolation of the Tuberculous. Pub. Health Rep. 72, 9:781 (Sept.), 1957.

Making It Official—"In the light of these studies it is clear that there is an increasing and consistent body of evidence that excessive smoking is one of the causative factors in lung cancer." Supplies of the Surgeon General's statement (and supporting documents) have been sent to state health officers and the American Medical Association with the suggestion that copies go to local health officers, local medical societies, and other health groups.

BURNEY, L. E. Excessive Cigarette Smoking. Pub. Health Rep. 72, 9:786 (Sept.), 1957.

Influenza Outbreaks — Mortality from influenza and pneumonia has kept to its downward trend throughout the century. Since 1937, first the sulfa drugs then the antibiotics have accelerated the trend. There have been 21 epidemics since the pandemic of 1918; the most severe of these occurring in the 1920 decade. There have been only two widespread epidemics, so far, in the present decade, in 1951 and 1953.

COLLINS, S. D., and LEHMANN, J. L. Influenza Epidemics During 1951–1956 with a Review of Trends. Pub. Health Rep. 72, 9:771 (Sept.), 1957.

Our Food and Drink—Once again we are regaled with our unenviable—is disgraceful a better word?—record of water-borne, milk-borne, food-borne and miscellaneously borne outbreaks of communicable diseases that point out a few of the weak spots in our public health protective services. The spirits of us (public health) mortals have but small cause to be proud.

DAUER, C. C., and SYLVESTER, G. 1956 Summary of Disease Outbreaks. Pub. Health Rep. 72, 8:735 (Aug.), 1957.

Toddler's Ears—Described here is a study designed to work out a practical hearing test for mass screening of preschool children and to judge its value from the standpoints of case finding and economy of time in carrying it out. The test adopted indicated that 6.5 per cent of the group of nursery school children had hearing loss and it required five and a half minutes to complete—seemingly a satisfactory indication of its usefulness.

GEYER, M. L., and YANKAUER, A. Detection of Hearing Loss in Preschool Children. Pub. Health Rep. 72, 8:723 (Aug.), 1957.

Sharing Solutions—For several years, now, an annual workshop has been offered the nursing directors of California's local health departments at which the nurses study and try to solve their administrative problems. How the programs have been worked up is related in useful and suggestive detail. "Each year the group has become more

relaxed, tolerant, and objective in its approach to the topics discussed, and individual directors have felt freer to present their agency problems with complete frankness."

HAIG, R., and PORTER, W. Workshops for Public Health Nursing Administration. Nursing Outlook 5, 7:524 (Sept.), 1957.

Your Own Mental Health—To tell you that this oration is about dedication, self-acceptance, and human understanding may possibly turn you away—which is just what is not intended. But those are the elements of successful service, the author says, and you had better read the essay to learn what he has to say about them.

HAUN, P. Mental Health for Living. Nursing Outlook 5, 7:512 (Sept.), 1957.

The Fat Eight to Fourteens—This five-panel discussion of obesity in childhood will, of course, have been seen by all our pediatricians but it should be called earnestly to the attention of all other MCH'ers. It begins and ends on the familiar theme that endocrine disorders are rarely to be blamed for the fat on children and adolescents. As with us portly adults, their burden is almost always a simpler case of eating too much and doing too little.

HILL, L. F., et al. Obesity in Pediatric Practice (and four related papers). Pediatrics 20, 3:540 (Sept.), 1957.

Again, Go Slow—Another symposium on fats in human nutrition ends with the now familiar admonition that, although we are making great progress in nutritional research, we do not yet know enough to suggest radical changes in our accustomed diets. The nature of the promising research under way is worked over in these half dozen excellent reports.

HOLT, L. E., Jr., et al. Dietary Fat—Its Role in Nutrition and Human Requirements (and five related papers). J.A.M.A. 164, 17:1890 (Aug. 24), 1957.

More About Influenza—Whatever may be the status of the impending epidemic when this item appears in print the series of papers to which it calls your attention will still be of immediate interest to you. The first paper tells us that there are four major immunologic types of the virus, A, B, C, and D. The newest (Asian) variant of Type A; called FE, bears only slight antigenic similarity to the other Type A strains. Serologic diagnosis may be made by either hemagglutination-inhibition or complement-fixation tests. The Surgeon General's paper, which follows, strongly urges health and medical authorities to stimulate and promote the nation-wide program of vaccination.

JENSEN, K. E. New Set of Type A Influenza Viruses (and three related papers). J.A.M.A. 164, 18:2025 (Aug. 31) and 165, 1:59 (Sept. 7), 1957.

Syphilis Scareheads—You may have heard local repercussions of scarehead articles reporting explosive outbreaks of syphilis. Two of these, a Readers Digest condensation of a newspaper story and a mimeographed "Joint Statement" are critically examined in an editorial. (Editorials as such are not ordinarily selected for comment in this self-appointed guide for health browsers, but this one is a fine and illuminating comment on the real meaning of current VD statistics.) It concludes that the current trend is still downward and that cold epidemiologic facts lend no support to the alarm viewers.

MOORE, J. E. The "Rising Tide of Infection" of Syphilis. J. Chronic Dis. 6, 3:280 (Sept.), 1957.

Antidote for Boredom—Figures are notoriously dull, says this (Br.) author of an amusing venture in proving that they need not be. He tells his

reader which country to go to if he wants to shuffle off on one of the more widely favored routes to the grave. There may be an idea here for others who wish to adapt (nice word for "steal") it to their own attempts to brighten up their dull vital statistics.

PAUL, H. To Die or Not to Die? M. Officer 98, 9:129 (Aug. 30), 1957.

Something New—Described here is a quick, on-the-spot and economical test for syphilis which should prove useful in syphilis control projects with civil defense and disaster evacuee groups, or in mass immigration situations, among other public health emergencies.

PORTNOY, J., et al. Rapid Plasma Reagin Test for Syphilis. Pub. Health Rep. 72, 9:761 (Sept.), 1957.

Reminder—An outbreak of aseptic meningitis attributed to a strain of Coxsackie virus offers further evidence that viruses other than poliovirus may cause illnesses assumed to be nonparalytic poliomyelitis.

SYVERTON, J. T., et al. Outbreak of Aseptic Meningitis Caused by Coxsackie B5 Virus. J.A.M.A. 164, 18:2015 (Aug. 31), 1957.

For the Handicapped—A number of important contributions relating rehabilitation to public health (in a wide variety of disabling conditions) are assembled here. Further reports of health department successes in collaborating with established welfare and rehabilitation services are sought.

WHITTEN, E. B., et al. Rehabilitation—A Guide for Referral Agencies (and six related papers). Pub. Health Rep. 72, 9:810 (Sept.), 1957.

Rheumatic Fever Recurrences—Injected penicillin, given every four weeks, proved better than oral penicillin in preventing streptococcal infections and rheumatic recurrences—among a large group of children who had had rheumatic fever.

WOOD, H. F., et al. A Controlled Study of Three Methods of Prophylaxis Against Streptococcal Infection in a Population of Rheumatic Children. New England J. Med. 257, 9:394 (Aug. 29), 1957.

Anent Eating Too Much—From England, too, comes this conclusion: readily available data do not support any theory which supposes a single or major dietary cause of coronary thrombosis. However, overconsumption of all foods with underindulgence in exercise may be one of several causes of the condition.

YUDKIN, J. Diet and Coronary Thrombosis: Hypothesis and Fact. Lancet 273, 6987:155 (July 27), 1957.

If additional information is desired regarding the articles listed in the Bibliography, please communicate directly with the publications in which they appeared; the addresses are furnished for your convenience.

J.A.M.A. (Journal of the American Medical Association), 535 N. Dearborn St., Chicago, Ill.

J. Chronic Dis. (Journal of Chronic Diseases), C. V. Mosby, 3207 Washington Blvd., St. Louis, Mo.

Lancet, 7 Adam St., Adelphi, London, W.C. 2, England

M. Officer (Medical Officer), Chronicle House, 72–78 Fleet St., London, E.C. 4, England

New England J. Med. (New England Journal of Medicine), Massachusetts Medical Society, 8 The Fenway, Boston 15, Mass.

Nursing Outlook, American Journal of Nursing Company, 2 Park Ave., New York 16, N. Y.

Pediatrics (Journal of the American Academy of Pediatrics), 301–327 E. Lawrence Ave., Springfield, Ill.

Pub. Health Rep. (Public Health Reports), Gov. Ptg. Office, Washington, D. C.

Association News

AMPLIFICATION OF THE ROLE OF THE COORDINATING COMMITTEE ON LABORATORY METHODS

The Coordinating Committee on Laboratory Methods (CCLM) was organized under the Committee on Research and Standards in 1947. The principal reasons for organization of the committee were to center in one committee responsibility for preparation of laboratory methods volumes, assure representation of all interested Sections on committees formed for the preparation of laboratory methods to be published as an Association report, assure representation on such committees of both the persons who will perform the laboratory work and enforce regulations based upon the results of laboratory tests, and, finally, to provide a means for speeding up the process of obtaining necessary approval for the publication of reports as Association statements.

The wisdom of organizing the Coordinating Committee has been proved during the past 10 years. A Review Committee composed of Howard L. Bodily, Ph.D., chairman; Earle K. Borman; Albert V. Hardy, M.D.; and Edmund K. Kline, Dr.P.H., has considered the past history of the committee to determine whether or not its functioning can be modified so that Sections will be encouraged to undertake laboratory methods preparation themselves while at the same time preserving the valuable role of the Coordinating Committee. The Review Committee has presented its report. Both the Coordinating Committee and the Committee on Evaluation and Standards, the successor to the Committee on Research and Standards, have accepted the report and recommended its publication. The original statement outlining the formation of the Coordinating Committee on Laboratory Methods (A.J.P.H., July, 1947, p. 936) and the report of the Review Committee are presented for the information of the membership. Any comments should be sent either to Ferdinand R. Hassler, M.D., chairman of the Coordinating Committee, or to the Association office.

An Association Coordinating Committee on Laboratory Methods

1. Basic Components of the Committee:

1.1 The Coordinating Committee to be a subcommittee of the Committee on Research and Standards.* Members, from the appropriate Sections and/or from among the chairmen of Laboratory Methods Committees, will be appointed by the Committee on Research and Standards on the basis of their individual qualifications to perform the job assigned to the Coordinating Committee. The chairman of the committee will be regarded a member ex officio of the Committee on Research and Standards, if not already on that committee.

1.2 The chairmen of Laboratory Methods Committees will be appointed by the Coordinating Committee; other members will be appointed by the chairman of the Coordinating Committee. All such appointments will be made in consultation with the Section Councils involved. The appointment of members of any Laboratory Methods Committee will be subject to approval by the Section Council of the Section to which

* Now the Committee on Evaluation and Standards.

the appointees belong. There shall be only one Laboratory Methods Committee active in the preparation of "Methods" in any particular field. Appointment to "Methods" committees of persons not members of the American Public Health Association is permissible.

1.3 The Coordinating Committee shall appoint the APHA representatives to any Joint Editorial Board concerned with interests of other organizations after approval of its nominations by the Executive Board. The Coordinating Committee shall also appoint any special editorial committees necessary for preparing APHA Standard Methods Committees.

2. Duties and Functions:

2.1 The Coordinating Committee Will:

- 2.11 Assume leadership among existing Laboratory Methods Committees.
- 2.12 Establish Laboratory Methods Committees upon the recommendation of any Section or as deemed necessary.
- 2.13 In consultation with Section Councils involved appoint a chairman of each Laboratory Methods Committee. Committee members will be appointed by the chairman of the Coordinating Committee after consultation with the chairman of the committee concerned.
- 2.14 Assure competent, adequate group review of any laboratory methods by its committee. This may extend to the preparation of guiding rules of procedure for any Laboratory Methods Committee.
- 2.15 Promote the preparation of new laboratory methods and timely review of existing reports.
- 2.16 Resolve controversial questions that may not be possible of solution in the committee involved.
- 2.17 Establish uniform style, format, etc., to be followed in the preparation of any laboratory method other than those under direction of a Joint Editorial Board.
- 2.18 Present to the Committee on Research and Standards completed manuscripts with the assurance that competent group judgment has been obtained in their preparation.

2.2 Laboratory Methods Committees Will:

- 2.21 Arrange for allocation of material to proper persons for preparation.
- 2.22 Arrange for review of entire manuscript by the full committee.
- 2.23 Refer irreconcilable questions to the Coordinating Committee.
- 2.24 Prepare not only methods to be adopted as, "Standard Methods," but any others to be published.
- 2.25 Assure coordination of views of those interested in the development of laboratory methods with those interested in the interpretation and application of those methods, and vice versa.

2.3 Association Sections or Their Councils Will:

- 2.31 Recommend to the Coordinating Committee the formation of new Laboratory Methods Committees as the need arises.
- 2.32 Confirm appointments to a Laboratory Methods Committee of members affiliated with the Section.
- 2.33 Request the Coordinating Committee for representation on any Laboratory Methods Committee in which the Section is interested either from the laboratory or field implications.

2.4 Joint Editorial Board Representative(s) Will:

- 2.41 Represent the Association in the preparation of uniform procedures and allocation of areas of responsibility to the organizations sponsoring the publications.
- 2.42 Refer back to the Coordinating Committee any subjects which cannot be settled by Joint Editorial Board action.
- 2.43 Be limited to editing duties. They will not have any judicial responsibilities.

The clarifying statement of the Review Committee approved as stated above is:

"1. The final preparation of any laboratory method or methods to be approved by the American Public Health Association or to be published under the sponsorship of the American Public Health Association, should be prepared by a committee appointed by

the Coordinating Committee on Laboratory Methods. A Methods Committee may consist of representatives from related committees in two or more Sections, supplemented as the need indicates by additional members designated by the chairman of the Coordinating Committee or it may be appointed by the committee. In any event the appointments of these committees shall be made in accordance with the procedure outlined in the statement of duties and responsibilities of the Coordinating Committee on Laboratory Methods published in the American Journal of Public Health, Vol. 37, page 936, 1947.

"2. When one Section of the Association recommends that a Laboratory Methods Committee be established, the Coordinating Committee is to inquire about the interest of any other Section of the Association in the development of a suitable committee.

"3. The Coordinating Committee on Laboratory Methods will refer to the appropriate Section any activities suggested to it which do not involve two or more Sections of the Association, or which do not involve the final preparation of a manuscript or publication sponsored by the Association.

"4. The Coordinating Committee will serve as a steering committee of the various Laboratory Methods Committees in the development of manuscripts for final publication by the Association.

"5. The Laboratory Methods Committees established by the Coordinating Committee are not designed primarily to do developmental work on new laboratory methods. Their basic responsibility is the selection of methods and the preparation of manuscripts for publication. An exception to this is a Laboratory Methods Committee established to assist in the solution of a controversial question.

"6. Development or evaluation of new methods is a primary responsibility of the Sections. When problems of this nature are referred to the Coordinating Committee they will in turn be referred to the appropriate Section, or the Section counselors of two or more Sections may be requested to appoint a person or persons to work with members of other Sections in developing or evaluating the required laboratory method. The counselors of a Section may seek directly the interest of representatives of other Sections in the laboratory methods or may request the Coordinating Committee to seek information concerning the interest of other Sections of the Association. The chairman of the Coordinating Committee is to be advised by the Section counselors of any direct contact with another Section regarding the development or evaluation of new laboratory methods.

"7. There should be close coordination between the Coordinating Committee and the Section counselors on formation of committees and appointments of members of these committees.

"8. Sections should develop their own committees on laboratory methods problems related to the Section except for the development of publications which are sponsored by the Association. It is understood that when the problem has implications or interest to other Sections inquiry regarding such interest will be made through the procedures outlined above."

Broad St. Louis Survey Completed

The results of a comprehensive study of public health and hospitals in the City and County of St. Louis were recently released. The 437-page report "Public Health and Hospitals in the St. Louis Area—A Mid Century Appraisal" was prepared by the American Public Health Association following a 16-month study directed by Edward Press, M.D., field director, with the assistance of Ira V. Hiscock, Sc.D., and Roscoe P.

Kandle, M.D., as chief consultants, and a panel of 24 additional consultants in the various special aspects of the study. The survey was financed chiefly by the City of St. Louis with the aid of the United Fund of Greater St. Louis and the State Division of Public Health. Although initially intended primarily to determine whether or not a new chronic disease hospital and an additional district public health center provided for in a bond issue were needed, it was extended to cover most of the major public health and hospital problems in the city and county. Among the recommendations were better coordinated and long-range planning, a separate department of health and hospitals directly responsible to the Mayor rather than as a part of the department of public welfare, and that active relationships between the city hospitals and the two medical schools be developed.

Model Radiation Protection Laws

In an effort to reduce radiologic hazards, Daniel Bergsma, M.D., chairman of the Association's Committee on Radiological Health, has been working with similar committees of the State and Territorial Health Officers Association and the Conference of State Sanitary Engineers on the preparation of materials to aid state and local health departments. This group has recently completed two model state radiation protection acts, one with and one without a commission. In addition, the group has also prepared a statement of "Public Health Policy on Radiological Health." They are inviting comments and suggestions. These should be sent to Dr. Bergsma, State Commissioner of Health, Trenton, N. J., from whom copies of these materials may be obtained.

Sanitary Engineers Founders' Period Closes

The American Sanitary Engineering Intersociety Board announces the closing of the period for filing applications for certification without examination. The actual closing date was October 1 at which time more than 1,250 applications had been received. The first application was received on July 1, 1956.

The Intersociety Board has been incorporated to "improve the practice, elevate the standards and advance the cause of sanitary engineering." It is sponsored by six professional organizations of which the American Public Health Association is one. At a meeting of the Board of Trustees on October 17 and 18 more than 425 applications were considered with 325 being accepted under the founders' provision for certification without examination. Some 500 applications remain to be considered under this same provision.

The first qualifying examination was given on October 17. The examination was prepared by the Professional Examination Service of the Association.

News of Affiliated Societies and Branches

Research Grant to Southern Branch

The Southern Branch, APHA, through its Public Health Nursing Section and in cooperation with the University of North Carolina School of Public Health, is undertaking a research project to set up criteria for the selection of field training centers in rural local health departments and to develop a method for evaluating the competencies of a nurse for beginning public health nursing. The need for the project was brought to light by the Section's Committee on Field Teaching. It is being supported through a Pilot Study Grant from the Research Grants Division of the Public Health Service.

APHA AFFILIATED SOCIETIES AND BRANCHES

SOCIETY AND SECRETARY

ARIZONA PUBLIC HEALTH ASSOCIATION, Goldie Gold, Maricopa County Health Dept., Phoenix
ARKANSAS PUBLIC HEALTH ASSOCIATION, Mrs. Vada Russell, State Health Dept. Bldg., Little Rock
CALIFORNIA, NORTHERN, PUBLIC HEALTH ASSOCIATION, Emanuel H. Pearl, 2220 Moorpark Ave., San Jose 28
CALIFORNIA, SOUTHERN, PUBLIC HEALTH ASSOCIATION, Byron O. Mork, M.D., University of California at Los Angeles, Los Angeles
COLORADO PUBLIC HEALTH ASSOCIATION, Margaret D. Lewis, 659 Cherokee St., Denver
CONNECTICUT PUBLIC HEALTH ASSOCIATION, Mrs. Claire Reinhardt, 310 Cedar St., New Haven
CUBAN PUBLIC HEALTH SOCIETY, Dr. Raphael Calvo Fonseca, Calle 19 No. 511 Altos Vedado, Havana
FLORIDA PUBLIC HEALTH ASSOCIATION, Nathan J. Schneider, Ph.D., P. O. Box 210, Jacksonville
GEORGIA PUBLIC HEALTH ASSOCIATION, Carl Fox, 33 Pryor St., N.E., Atlanta
IDAHO PUBLIC HEALTH ASSOCIATION, Wesley O. Young, D.M.D., P. O. Box 640, Boise
ILLINOIS PUBLIC HEALTH ASSOCIATION, William J. Hixon, Evanston Health Dept., Evanston
INDIANA PUBLIC HEALTH ASSOCIATION, Hester Beth Bland, 1330 W. Michigan St., Indianapolis
IOWA PUBLIC HEALTH ASSOCIATION, Mary L. Wombacher, State Dept. of Health, Des Moines
KANSAS PUBLIC HEALTH ASSOCIATION, Evelyn Ford, State Board of Health, State Capitol, Topeka
LOUISIANA PUBLIC HEALTH ASSOCIATION, Mrs. Lucille Sawyer, Shreveport
MASSACHUSETTS PUBLIC HEALTH ASSOCIATION, Mrs. Elizabeth K. Caso, Dept. of Health, Cambridge
MICHIGAN PUBLIC HEALTH ASSOCIATION, Maurice J. Mayer, 405 Hollister Bldg., Lansing
MINNESOTA PUBLIC HEALTH CONFERENCE, D. S. Fleming, M.D., State Dept. of Health, University Campus, Minneapolis
MISSISSIPPI PUBLIC HEALTH ASSOCIATION, H. E. Boone, P. O. Box 1700, Jackson
MISSOURI PUBLIC HEALTH ASSOCIATION, Mrs. Nadia Craver, 5th Fl., State Office Bldg., Jefferson City
MONTANA PUBLIC HEALTH ASSOCIATION, Emma Wright, Box 811, Harve
NEBRASKA PUBLIC HEALTH ASSOCIATION, Matilda McIntire, M.D., Omaha-Douglas County Health Dept., Omaha
NEW MEXICO PUBLIC HEALTH ASSOCIATION, Robert Howell, 305 Terrace Ave., N. E., Albuquerque
NEW YORK CITY, PUBLIC HEALTH ASSOCIATION OF, Joseph Kadish, 164 W. 174th St.
NEW YORK STATE PUBLIC HEALTH ASSOCIATION, Mary C. Egan, State Dept. of Health, 333 E. Washington St., Syracuse 2, N. Y.
NORTH CAROLINA PUBLIC HEALTH ASSOCIATION, R. W. Brown, Bucombe County Health Dept., Asheville
NORTH DAKOTA PUBLIC HEALTH ASSOCIATION, Jean E. Norton, R.N., Box 133, Bismarck
OHIO PUBLIC HEALTH ASSOCIATION, Virginia Jones, Ohio Dept. of Health, Dayton
OKLAHOMA PUBLIC HEALTH ASSOCIATION, Marjorie Butler, 3400 North Eastern, Oklahoma City
OREGON PUBLIC HEALTH ASSOCIATION, T. M. Colasuonno, M.D., State Board of Health, Portland
PENNSYLVANIA PUBLIC HEALTH ASSOCIATION, Robert H. Conn, 303 N. Second St., Harrisburg
PUERTO RICO PUBLIC HEALTH ASSOCIATION, Margarita Martinez, Apartado 211, San Juan 2
SOUTH CAROLINA PUBLIC HEALTH ASSOCIATION, Laura M. DeMarse, State Health Dept., Columbia
SOUTH DAKOTA PUBLIC HEALTH ASSOCIATION, Louis E. Remily, State Dept. of Health, Pierre
TENNESSEE PUBLIC HEALTH ASSOCIATION, C. B. Tucker, M.D., State Dept. of Health, 420 Sixth Ave., N., Nashville
TEXAS PUBLIC HEALTH ASSOCIATION, H. E. Drumwright, 3900 Lemmon Ave., Dallas
UTAH PUBLIC HEALTH ASSOCIATION, Mrs. Virginia Cole, City Health Dept., 115 S. State St., Salt Lake City
VIRGINIA PUBLIC HEALTH ASSOCIATION, William A. Dorsey, P. O. Box 2088, Richmond
WASHINGTON STATE PUBLIC HEALTH ASSOCIATION, Kathleen Burwell, R.N., State Dept. of Health, Smith Tower, Seattle
WEST VIRGINIA PUBLIC HEALTH ASSOCIATION, Paul B. Shanks, State Health Dept., Charleston
WISCONSIN ASSOCIATION FOR PUBLIC HEALTH, Paul Weis, 1 W. Wilson St., Madison
SOUTHERN BRANCH, A.P.H.A., Mary Irene Cummins, Box 323, Harriman, Tenn.
WESTERN BRANCH, A.P.H.A., Mrs. L. Amy Darter, State Dept. of Health, 2151 Berkeley Way, Berkeley, Calif.

APHA membership application blank on page XXIX

Employment Service

The following pages present information for those seeking public health personnel and for those seeking positions in public health. Other information concerning vacancies and personnel available is on file in the Association office. Anyone wishing to have the benefit of this additional information can obtain it by writing to the Vocational Counseling and Placement Service of the Association.

Advertising space in these pages is available at special rates for the use of employers or individuals. The charges are $5 for the first 50 words or fraction thereof and $1 for each additional 10 words or fraction thereof. There is no charge to members or Fellows of the Association who desire to utilize the **Positions Wanted** portion of these pages. **Closing date** for receipt of advertisements is the first of the month preceding the desired month of publication. **All correspondence should be sent to the American Public Health Association, 1790 Broadway, New York 19, N. Y.**

POSITIONS AVAILABLE

Public Health Physicians—C.D., V.D. Full time and half time. Wanted for immediate placement. Los Angeles County Health Department. Begins at $755 per month with yearly increases. California P and S M.D. certificate required at time of appointment. Apply Dr. Gilbert, Health Officer, County Health Department, 241 N. Figueroa, Los Angeles 12, Calif., acting for the Los Angeles County Civil Service Commission.

Director, Public Health Laboratories—Qualifications: Graduation from an accredited college or university with an earned doctor's degree (Ph.D., Sc.D., M.D., D.V.M.) in the field of laboratory sciences and three years' progressively responsible experience in a public health laboratory or similar agency. Salary range $9,000–$10,812. For applicant with M.D. or D.V.M. the salary range is $9,000–$11,604. Write Dalton Roberts, Chief, Administrative Services, Colorado Department of Public Health, 420 State Office Bldg., Denver, Colo.

Public Health Administration Consultant to Brazil—Pan American Sanitary Bureau, Regional Office of the World Health Organization, seeks the services of a Public Health Administrator for assignment as adviser to Government of Brazil on integration of public health medical care activities in regional social economic development program. Duration: Initial contract one year, renewable. Requirements: M.D. degree from recognized school of medicine; graduate training and considerable experience in public health. Employment conditions: Attractive salary and allowances. For further details, write to Personnel Officer, PASB/WHO, 1501 New Hampshire Ave., N.W., Washington 6, D. C.

Health Officers Needed—Must be citizen of the United States and eligible for Florida medical license. Experience and training for Health Officers III and IV. Salary depends upon amount of training and experience. Health Officer II as assistant director, salary range $690–$960, plus travel at 10 cents per mile. Health Officer III as director of small health unit, salary range $760–$1,050, plus travel at 10 cents per mile. Health Officer IV as director of medium sized health unit, salary range $840–$1,150, plus travel at 10 cents per mile. Write for details to Wilson T. Sowder, M.D., M.P.H., State Health Officer, P. O. Box 210, Jacksonville 1, Fla.

Public Health Physicians—New Mexico Department of Public Health. Salary $9,000 and up; three years' professional experience required. Write Merit System Supervisor, Box 939, Santa Fe, N. M.

County Health Commissioner—to direct public health programs in Genesee and Wyoming Counties in New York State; total population 84,000. Salary $12,500 (to start). Vacation, sick leave and retirement benefits. Requirements are M.P.H. and one year of satisfactory full-time experience in general public health work. Address inquiries to Mr. Harold L. Peet, President, Wyoming County Board of Health, Pike, N. Y.

Director of Health—Administer public health program for progressive industrial city, 70,000 population. Requires physician eligible for membership in American Board of Preventive Medicine with M.P.H. and three years of public health experience. Maximum age fifty. Must be U. S. Citizen. Salary $12,814–$15,214. Obtain further information and brochure of city from Personnel Officer, 254 Municipal Bldg., Hamilton, Ohio.

Public Health Physician (District Health Officer)—State of Wisconsin. Two positions. One position includes 11 counties in north central part of state, headquarters Rhinelander. Second position includes eight counties in area bordering Lake Michigan, north of Milwaukee, headquarters Fond du Lac. Act as medical administrator of district office; district epidemiologist; plan, organize, supervise work of district office personnel consisting of public health engineer, public health nurse, sanitarians, nutritionist, dental hygien-

ist. M.P.H. degree plus three years' experience in public health administration; eligibility for a license in Wisconsin. Salary $11,592–$14,412 per year, plus travel allowance. Civil service, vacation, sick leave, social security, retirement benefits. Write Carl N. Neupert, M.D., State Health Officer, 400 State Office Bldg., Madison 2, Wis.

Public Health Physician (Epidemiologist)—Wisconsin State Board of Health, Madison. Plan, organize, and develop epidemiological studies and programs on a state level; participate and cooperate with state district health officers in field investigations. M.D., M.P.H. degrees plus three years' experience in public health with emphasis upon epidemiology. Eligibility for a license to practice medicine in Wisconsin. Salary $11,592 with five annual increments to $14,412 per year, plus travel allowance. Civil service; vacation, sick leave, social security and retirement benefits. Write Milton Feig, M.D., Director, Section on Preventable Diseases, State Board of Health, State Office Bldg., Madison 2, Wis.

Public Health Engineers—Air pollution, industrial hygiene, water and sewage control programs. Starting salary open depending on qualifications within range $420 to $655 a month. Liberal travel allowance. State retirement and Social Security coverage. **Maternal and Child Health Director**—$13,320 to start. Social Security and state retirement coverage. Liberal travel allowance. Write to Mr. A. T. Johnson, Personnel Director, Oregon State Board of Health, P. O. Box 231, Portland 7, Ore.

Public Health Physician—For director of the Marion County Health Department, Fairmont, West Virginia. (Population 72,000.) Well-qualified staff including five public health nurses, three sanitarians, and two clerks. Starting salary $15,000 for qualified physician with public health training. Address inquiries to N. H. Dyer, M.D., M.P.H., West Virginia State Department of Health, Charleston 5, W. Va.

Public Health Physician—with training and experience in administration and epidemiology to serve as director of the Bureau of Preventable Diseases and Medical Services. Broad range of general administrative and clinical supervisory responsibilities include control of acute communicable diseases, tuberculosis, venereal diseases, and operation of medical clinic, cancer diagnostic clinic, mental health program, and a specialized municipal hospital. Annual operating budget of bureau is $800,000. Position under civil service. Vacation, sick leave, medical and hospital insurance, and liberal pension plan. Salary range $11,742–$12,410. Write to E. R. Krumbiegel, M.D., Commissioner of Health, Milwaukee Health Department, 200 E. Wells St., Milwaukee 2, Wis.

Health Commissioner—City of 62,000. To direct and supervise all activities of the Public Health Department and perform related work required. Graduation from recognized medical school; completion of approved internship and one year medical practice; and either one year public health training in approved public health school or three years' experience in public health administration required. Extensive knowledge of theory, principles and practices of general and preventive medicine, public health and administration preferred. Civil service status, 40-hour week, vacation, sick leave, medical and hospitalization insurance for the entire family, retirement plan. Salary range $10,680–$11,880 plus $65 per month car allowance. Apply Civil Service Commission, 7525 W. Greenfield Ave., West Allis 14, Wis.

Wanted: New Hampshire State Department of Health, a **Public Health Physician**—for Division of Maternal and Child Health and Crippled Children's Services, to assist in consultative, administrative public health work in the development of programs throughout the state, with special emphasis upon maternal and child health. Requirements include graduation from approved medical school, licensure or eligibility for licensure in New Hampshire, three years' practical experience in the field of maternal and child health or an M.P.H. degree. Salary range $6,300–$7,620 (authorization provided to employ at maximum), with travel allowance, annual and sick leave, and retirement benefits. Write Department of Personnel, State of New Hampshire, State House, Concord, N. H.

Public Health Physician Needed—for a county suburban area. Retirement plan, salary according to training, experience, and performance record, $13,000–$15,000 per year. Write Butler County, Ohio, Department of Health, Court House, Hamilton, Ohio.

Clinical Psychologist III—Position with County Health Department. Will be consultant to community agencies, carry on educational program, conduct inservice training courses. Requirements: Ph.D. and three years' clinical psychology experience. Salary range $6,960–$8,640, appointment above minimum. Apply Mr. Edward S. Haswell, Chief, Mental Health Section, North Carolina State Board of Health, Raleigh, N. C.

City and County Position Available: **Sanitarian I**—Several openings available in an expanding health control program. Require bachelor's degree in engineering, sanitary science, or biological sciences. Salary $366–$458. Career Service Authority, Room 178, City and County Bldg., Denver, Colo.

Wanted: **Director of Public Health Nursing**—Executive director, public health nursing service, large combined health department and visiting nurse service program.

Affiliated with University of Washington. Master's degree, six years' experience required. Position carries pension plan, Social Security, sick leave, and fringe benefits. Write Mrs. George Kinnear, Seattle-King County Visiting Nurse Service, 1000 Public Safety Bldg., Seattle 4, Wash.

Qualified Public Health Nurse—Must be eligible for California certificate. Salary $376–$458; travel allowance for use of private car. Write to San Benito County Health Dept., Health Center Bldg., Hollister, Calif.

Director of Nurses—State Services for Crippled Children, State University of Iowa. Direction of public health nursing services for children with handicapping conditions. Official state agency administered by the State University and affiliated with State Merit System. Baccalaureate degree including or supplemented by public health nursing preparation and an advanced course in orthopedic or pediatric nursing required; experience in both a generalized public health program and in the specialized field of care of physically handicapped required; one year of experience in supervisory, consultative, or administrative capacity necessary. Write John C. MacQueen, M.D., Director, State Services for Crippled Children, State University of Iowa, Iowa City, Iowa.

Public Health Nurse to Be Mental Health Nurse Instructor—to assist with planned inservice training program for public health nurses in psychiatric/mental health nursing; duties include participation in short intensive workshops and work with county public health nurses and mental health workers in follow-up care of mentally ill patients and other aspects of local mental health program. B.S. in nursing and four years' experience in public health nursing; master's degree in mental health/psychiatric nursing desirable; experience in teaching; starting salary $5,040. Excellent opportunities for security and advancement. Apply Director of Bureau of Mental Health, State Board of Health, P. O. Box 210, Jacksonville 1, Fla.

Public Health Nursing Director—for a generalized public health nursing program in a progressive city health department (80,000 population). Pleasant all-season recreational area. Staff of 12 public health nurses. Vacation, sick leave and retirement policies; group life insurance. Qualifications required: supervisory and administrative experience in an official agency; degree in public health nursing. Salary open. Submit letters of application to Edward W. Colby, M.D., Health Director, Portland, Maine.

Public Health Nursing Positions—Available in Health Department with the City of Flint, a rapidly growing city of 180,000 population. Beginning, intermediate, and administrative positions are available. Five-day, 40-hour week, with liberal retirement, vacation, and sick leave policies. Car furnished. Beginning salary rates: $3,952, $4,329, or $4,654, depending on experience and qualifications. Automatic increases and longevity rates for length of service. Apply Flint Civil Service Commission, City Hall, Flint, Mich.

Public Health Nurse Director—To direct and coordinate Grand Rapids, Kent County and Community Health Service (VNA) nursing services. A real challenge to integrate the above three services which serve a population of over 300,000. An M.P.H. degree, administrative experience, and demonstrated leadership ability are prerequisites for application. Position is under civil service and budgeted at $6,526–$7,904. Other benefits include retirement plan, Social Security, hospital insurance, 2–3 weeks' vacation, unlimited sick leave accumulation. Transportation furnished. Apply to W. B. Prothro, M.D., Public Health Director, Grand Rapids Health Department, Grand Rapids, Mich.

Director of Public Health Nursing—Supervising experience in an official agency, degree in public health nursing and New York State license or eligibility for such license required; city health department generalized program, 35-hour week, longevity increments, vacation, sick leave, and retirement policies; present starting salary $6,620. Write Chester A. Hicks, M.D., Director of Public Health, New Rochelle, N. Y.

Public Health Nursing Positions—Must be licensed or eligible for license in New York State; public health nursing preparation required; city health department generalized program; 35-hour week, vacation, sick leave and retirement policies; present salary range $4,020–$5,140 plus longevity increments of $250 at the end of 10, 15 and 20 years of service. Write Chester A. Hicks, M.D., Director of Public Health, New Rochelle, N. Y.

Public Health Nurse—University of Oregon Medical School. Wanted for five- to twenty-year project. Primary task is field investigation and follow-up study on 1,000 families. Civil service position based on qualifications and merit system. **Public Health Nutritionist**—wanted for same project. Primary task is evaluating the influence of diet factors during pregnancy and in infancy upon the development of children. Qualifications: College degree, community nutrition experience. Write to Rudolf Engel, M.D., Crippled Children's Division, University of Oregon Medical School, Portland, Ore.

Visiting Nurse As Working Supervisor—R.N. with public health certificate plus supervisor experience in a VNA or public health department. B.S. degree desirable. Salary to start at $5,400 or more depending on qualifications. Service will start as a two-

or three-nurse program. Apply Mrs. Shirley O'Connor, 3137 Valencia Ave., San Bernardino, Calif.

Open to citizens of the United States who possess the minimum qualifications:

Medical Social Work Adviser (Female)—$5,096–$6,136.

Medical Social Worker (Female)—$4,472–$5,356.

Dietitian I (Female)—$4,264–$5,096.

Nurse Anesthetist (Female)—$3,900–$4,680.

Medical Technologist I—$3,588–$4,264.

Write Personnel Director, Municipal Building, Hartford, Conn.

Bacteriologist IV—State Board of Health, State Laboratory of Hygiene, Madison, Wis. Supervise development of voluntary system of approval of laboratories to perform premarital blood tests employing standard accepted laboratory procedures; evaluate work of hospital laboratories wishing approval to do tests; perform technical laboratory examinations; provide training for hospital laboratory technicians where indicated. Ph.D. degree and three years' experience in a public health diagnostic laboratory; candidates with an M.A. degree may substitute additional experience for the Ph.D. Salary $6,372–$7,692 per year plus travel allowance. Civil service, vacation, sick leave, Social Security, retirement. Write W. D. Stovall, M.D., Director, State Laboratory of Hygiene, 437 Henry Mall, Madison 6, Wis.

Two Public Health Engineers—Qualifications: master's degree with at least two years of experience in a state or local health department. Duties: one position consists of direction of activities of the Sanitation Division, one of three major divisions of the Bureau of Environmental Sanitation; supervision of 37 employees; one position consists of direction of activities of the Housing Division, one of three major divisions of the Bureau of Environmental Sanitation; supervision of 21 employees with anticipation of an increase in 1958. Civil service position. Vacation, sick leave, medical and hospital insurance, and liberal pension plan. Salary range $7,355–$7,687. Write to E. R. Krumbiegel, M.D., Commissioner of Health, Milwaukee Health Department, 200 E. Wells St., Milwaukee 2, Wis.

Public Health Educator II—Qualifications: master's degree in public health education with at least three years' experience in an official or voluntary health agency. Duties: direction of division of health education; supervising four staff members, and promoting city-wide health education program. Salary range $5,790–$6,502. **Public Health Educator I**—Qualifications: college degree with at least one year of postgraduate study in public health education and at least one year's experience in a public or voluntary health agency. Duties: carrying out health education programs under the direction of Health Educator II. Salary range $5,091–$5,790. Civil service position. Vacation, sick leave, medical and hospital insurance, and liberal pension plan. Write to E. R. Krumbiegel, M.D., Commissioner of Health, Milwaukee Health Department, 200 E. Wells St., Milwaukee 2, Wis.

Public Health Educator II—This is an opportunity to work in a large progressive city health department providing public health services for a population of more than two million people. Position involves the development of audiovisual aid materials, preparation of reports, pamphlets, news releases and related materials on health subjects. Requirements: Degree, supplemented by completion of 16 semester hours of graduate courses in public health or public health education and two years of experience in educational and promotional work in a public health program. Starting salary $5,527 with regular yearly increments. Further information and application forms may be obtained by communicating with the Personnel Officer, Department of Public Health, Room 504, City Hall Annex, Philadelphia, Pa.

Speech and Hearing Therapist II—B.A. degree and two years' experience in speech and hearing therapy including one year cleft palate. Eligibility for basic clinical certification by American Speech and Hearing Association, $360–$460, with entrance salary depending on qualifications. Write State Board of Health, State Laboratory Bldg., Helena, Mont.

Psychiatric Social Worker—Work involves rendering consultant services in a state-wide mental health program with emphasis on assistance with the development of mental health services in county health departments; master's degree in social work with approved major in psychiatric social work and three years' psychiatric social work experience or master's degree in social work and four years' experience in psychiatric social work. Starting salary $5,280. Excellent opportunities for security and advancement. Write Director, Bureau of Mental Health, State Board of Health, P. O. Box 210, Jacksonville 1, Fla.

Immediate opening for position of **Director of Department of Occupational Therapy**—in progressive psychiatric center associated with the Medical School of the University of Michigan. Physical setup includes four units for intensive treatment of children, adolescents and adults, with occupational therapy and recreational therapy supervisors on each unit. Student affiliation center. Qualifications: B.S. degree, OTR; minimum of 4–6 years in occupational therapy, with extensive experience in treating psychiatric patients, in training students, and in administration. Generous

personnel benefits; salary open. Address communications to the Personnel Department, University Hospital, University of Michigan, Ann Arbor, Mich.

Public Health Nutritionist—Develop and conduct program in district area, including consultation to nurses, teachers, social workers, small hospitals, nursing homes, children's institutions; training programs; community studies and general nutrition education. Master's degree, internship, two years' hospital and community nutrition experience; $5,712–$6,852 plus travel expense. Vacation, sick leave, Social Security, retirement. Dr. Amy L. Hunter, State Board of Health, Madison, Wis.

Public Health Analyst—City of Long Beach Health Department. Population 320,000. Graduation from a college or university of recognized standing with a major in public health, statistics or the social sciences. Applicants must have had courses in statistics. Broad knowledge of the field of public health; thorough knowledge of statistics; research methods and survey technics; familiarity with sources of research data; ability to analyze, interpret, and present data objectively and effectively. Salary range $417–$510. Write to I. D. Litwack, M.D., Health Officer, 2655 Pine Ave., Long Beach 6, Calif.

Public Health Statistician—Salary range $460–$575. Requires master's degree in public health statistics and two years' experience in statistics, or an equivalent combination of training and experience. Write to Personnel Officer, Florida State Board of Health, P. O. Box 210, Jacksonville, Fla.

Public Health Analyst—$417 per month to start, increasing regularly to $516. Education equivalent to college graduation, including courses in statistics. Position open in Santa Ana, Calif. Write Orange County Personnel Office, 801–C N. Broadway, Santa Ana, Calif., for application blank or information.

Biostatistician (Medical)—To be responsible for the statistical affairs of the Commission on Professional and Hospital Activities, Inc., under the general direction of the director of the Commission. The Commission is a new organization under national medical and hospital association sponsorship created to conduct research and provide services in collection, tabulation, and analysis of clinical data to aid in improvement of medical practices and hospital administration. Requirements: master's degree in biostatistics or equivalent plus two or more years' experience with medical, public health, or biological data. Starting salary $7,700–$12,000, depending on qualifications. Write to Vergil N. Slee, M.D., Director, Commission on Professional and Hospital Activities, Inc., 211 First National Bldg., Ann Arbor, Mich.

Public Health Statistician—University of Oregon Medical School. Primary task is to take part in analysis of data collected in the evaluation of 1,000 pregnancies per year with follow-up study under supervision. Additional tasks include evaluating records of children with cerebral palsy and congenital heart diseases at the Crippled Children's Division. Qualifications: college degree with major in mathematics, psychology, or sociology and one year's study of statistics with some experience in the health field. Write to Rudolf Engel, M.D., University of Oregon Medical School, Portland, Ore.

Dental Hygienist—with public health degree or experience to administer a school dental health program. Salary $3,990 with automatic increments to $4,740 in six years; 40-hour week; travel allowance for use of personal car; annual vacation and sick leave; state retirement and Social Security benefits. Apply Director of School Health, Arlington County School Board, 1426 No. Quincy St., Arlington, Va.

POSITIONS WANTED

On Box Numbers, Address APHA at 1790 Broadway, New York 19, N. Y.

Public Health Psychiatrist—Age 35, M.D. and M.P.H. degrees, Board-certified in psychiatry, with training and experience in clinical, community, and public health psychiatry, and in administration, teaching and research. Publications. Currently assistant professor of psychiatry at outstanding medical school. Desires appointment at higher level on faculty of medical school or school of public health, or position as administrator of mental health program. Write **PH-74**, Employment Service, APHA.

Public Health Nutritionist—M.S. in nutrition and public health. Experience with individuals, groups, and organizations in the field of public health. Write **Box N-9**, Employment Service, APHA.

Commercial Advertisements

All communications on the following commercial advertisements should be sent to Burneice Larson, Medical Bureau, Suite 605, 900 North Michigan Avenue, Chicago 11, Ill.

OPPORTUNITIES AVAILABLE

(a) Director, city-county health department; total population to be served 500,000; resort area, Southwest; $15,000. (b) Health commissioner, county health department; full-time cooperating unit; near university center, Midwest; $15,000. (c) Assistant director for public health department providing service for 10 cities, 45 school districts, and unincorporated area of county; progressive program; California. (d) Medical director, student health department; 6,000 students; South. (e) Medical director; university health department; woman eligible; Southwest. (f) Epidemiologist; preventive medicine staff, foreign operations, leading industrial company; $14,000, plus $4,000 family maintenance; federal tax free. (g) Two sanitarians; degrees in sanitary sciences, public health or engineering, three years' experience required; foreign operations, major industrial company; $10,000–$12,000. (h) Health division director; council comprised of 143 agencies and organizations and 275 individuals at large; graduate degree with special courses in community organization, public health administration, and education required; supervisory experience in field of public health required; $6,480–$8,100. (i) Health inspector experienced meat and dairy products inspection; foreign; minimum $700. (j) Two public health educators; Chicago area; $4,500–$6,000. (k) Assistant professor in child and maternal health nursing; master's required; California. (l) Professor, public health nursing; university health department; East. (m) Director, public health nursing, city health department; excellent opportunity, expanding generalized program; Missouri; salary commensurate ability. (n) Supervisor; state health department; mountains, near Canada; $6,000. (Supervisory, staff, foreign assignments; Alaska, Pan American countries; to $8,000.) (o) Infirmary; boys' academy, age seven to 16; wealthy residential area near leading university city.

OPPORTUNITIES WANTED

Sanitarian, experienced as chief of sanitation departments in United States and foreign countries; available for opportunity involving administration and development of public health and sanitation programs.

WANTED—Opportunities for public health physicians, nurses, health educators, engineers, laboratory personnel. Candidates in all parts of the country, available for administrative, academic, and staff appointments. Negotiations strictly confidential.

Journals Wanted

The Association has received several requests for the October, 1955, May, June and July, 1957, Journals from persons who bind the magazines. These persons and the Association would be grateful if members having no use for these particular issues would make them available to others. Such generosity will be much appreciated. The magazines should be sent to the Association office at 1790 Broadway.

News from the Field

WHO News

Meeting of PASB Directing Council

A budget of three million dollars, representing an increase of 20 per cent, was adopted by the directing council of the Pan American Sanitary Organization meeting in Washington for two weeks in September. It also projected a four million dollar budget for 1959.

In presenting his report, Fred L. Soper, M.D., director of the Pan American Sanitary Bureau, stressed the need for long-range planning in the health programs of the member states, particularly in the direction of strengthening national and local health services, expanding training facilities, and greater coordination of eradication programs.

One day of the meeting was devoted to technical discussions on improving methods for the evaluation of health programs. Among 38 resolutions passed was one for strengthening the program of fellowships to public health workers for intensive study in their various fields of activity. Another had to do with the progress of the manual in preparation containing minimum recommended sanitation standards for hotels, restaurants, tourist centers, and transportation facilities in the Americas.

The plans for malaria eradication are being carried out with the help of supplementary voluntary funds now amounting to nearly two and a half million dollars. Present plans indicate eradication of malaria in most of the Western Hemisphere countries in five years and its complete eradication in the foreseeable future.

By invitation of the directing council, Dr. Nicholaas H. Swellengrebel, Netherlands representative, gave a paper on "The Place of Social Anthropology in Public Health." He described the problems health educators, especially, face in working with peoples whose mores and culture are different from their own.

Dr. M. G. Candau, director general, WHO, addressed a special session commemorating the 10th anniversary of the Constitution of the Pan American Sanitary Organization. Dr. Alberto Bissot, Jr., director general of public health, Panama, was elected chairman of the session. Vice-chairmen elected were Dr. Abraham Horwitz of Chile and Dr. Lucien Pierre-Noel of Haiti. Leroy E. Burney, Surgeon General of the Public Health Service, represented the United States at the meeting.

Radiation and Human Heredity

The report of a study group on the effect of radiation on human heredity that met in Copenhagen in August, 1956, is now available. This report suggests various lines of research that may help to determine the human tolerance limits for safe radiation exposure. "All man-made radiation must be regarded as harmful to man from the genetic point of view," says the report.

The volume gives the background and history of the radiation problem, particularly as intensified by the advent of atomic energy. The highlights of the report are summarized in the WHO Chronicle of August, 1957. In this Challenge of Atomic Energy issue is also a statement on "Responsibilities of the Medical Profession in the Use of X-Rays and Other Ionizing Radiations," which was prepared by the UN Scientific Committee on the Effects of Atomic Radiation.

Both the Chronicle and the volume are available from the Columbia University Press, 2960 Broadway, New

York 27. Chronicle, 30 cents; Effect of Radiation on Human Heredity, 168 pp, $4.

Compulsory Diphtheria Immunization

In the recently published WHO International Digest of Health Legislation the status of diphtheria immunization is reviewed. Here it is reported that compulsory immunization was first introduced in the Canton of Geneva, Switzerland, in 1932. Since that time compulsory laws have been enacted in 20 countries. However, some of these do not make reinforcing doses mandatory.

France first prescribed combined immunizations in 1936 but few other countries stipulate that these must be used. It is pointed out, however, that in Canada and the United States diphtheria immunization is almost always associated with tetanus and/or whooping cough immunization. The United States also is among the countries that "believe health education of public is sufficient" to effect immunization of substantially all of the child population.

European Office to Copenhagen

The European Regional Office of WHO was officially transferred from Geneva to Copenhagen in June, 1957. The title and keys to the headquarters building were handed to the director-general, Dr. M. G. Candau, by Prime Minister H. C. Hansen of Denmark. Dr. Candau in turn turned them over to the regional director, Dr. Paul J. J. van de Calseyde.

The European Regional Office now has a 10-year history. It serves 27 active member countries with a total population of about 600,000,000. The regional staff of 70 is drawn from 14 countries, 12 of them European.

Influenza Conference Recommendations

Surgeon General Leroy E. Burney conferred with state and territorial health officials in Washington, August 27–28. Here were detailed the various strands of the activities of separate voluntary and official agencies for heading off or minimizing the effects of an Asian influenza epidemic that threatens the United States in the coming winter.

According to the Proceedings of this conference, now available, recommendations were developed by four separate committees—disease reporting and epidemic surveillance, community planning, vaccination promotion, and research and program evaluation.

Reporting by counties to states was recommended with weekly state reports to the Public Health Service.

The Community Planning Committee placed upon the health officer the responsibility for organizing community resources, using particularly an existing health council or an ad hoc group similarly organized. Essential services should be maintained. Closing schools or prohibiting public gatherings was thought to be of little value.

The Vaccination Committee recommended a system of interstate allocation of vaccine based on a voluntary agreement with manufacturers. The Public Health Service was urged to recommend these priorities in vaccination: (1) individuals whose services are necessary to the health of the community, (2) individuals necessary to maintain other basic services of the community, and (3) persons with tuberculosis and others who constitute a special risk. Local advisory committees were suggested and vaccination of children approved.

A national commission on influenza was recommended which would identify research and other needs and would encourage and coordinate research and other activities to meet these needs. Such a commission should consider both the urgent and the long-range problems in relation to the civilian population, functioning in the field of influenza

much as the Armed Forces Epidemiological Board.

Since that meeting, Surgeon General Leroy E. Burney has appointed a 14-man Advisory Committee to appraise research on the disease and if needed spur further research. The director of the National Institutes of Health, James A. Shannon, M.D., is authorized to call conferences of this group which consists of:

George E. Burch, M.D., professor of medicine, Tulane University School of Medicine
Edward C. Curnen, Jr., M.D., professor of pediatrics, University of North Carolina School of Medicine
Gail Dack, M.D., director, Food Research Institute, University of Chicago
Fred M. Davenport, M.D., associate professor of epidemiology, School of Public Health, University of Michigan
Dorland J. Davis, M.D., scientific director, National Institute of Allergy and Infectious Diseases
Geoffrey T. Edsall, M.D., director, Division of Communicable Diseases, Walter Reed Army Institute of Research
Keith Jensen, Public Health Service Laboratories, Montgomery, Ala.
Capt. J. R. Kingston, General Medicine and Surgery Branch, Research Division, Bureau of Medicine and Surgery, Department of the Navy
Robert F. Korns, M.D., New York State Department of Health
Alexander D. Langmuir, chief, Epidemiology Branch, Communicable Disease Center
Colin M. MacLeod, professor of experimental medicine, University of Pennsylvania School of Medicine
Col. Thomas W. Mattingly, chief of cardiology, Walter Reed Army Medical Center
Thomas F. Sellers, M.D., Georgia State Health Officer
Joseph E. Smadel, M.D., associate director, National Institutes of Health

Nine of the 14 are members or Fellows of the American Public Health Association.

Report of the Proceedings is presumably available without charge from the Public Health Service, Washington, D. C. The Social Legislation Information Service for September 3, 1957, has a useful summary that highlights the responsibility of the health officer for directing the anti-influenza campaign in his area.

Public Health Combats Weeds

Control of ragweed and poison ivy will be discussed in the Public Health Section of the Weeds Society of America during the second biennial meeting to be held in Memphis, Tenn., January 13–15, 1958. The program will provide information to health, park, public works, and highway departments and other interested state and municipal agencies on the use and effectiveness of the new herbicides. Health department interests in other weeds significant in allergies will also be discussed. Plans for the organization of a Public Health Section in the Southern Weed Control Conference are to be acted on. For further information, A. H. Fletcher, New Jersey State Health Department, Trenton.

Research on Aging Regional Center

Duke University is planning a major scientific attack on the problems of aging through what is reported to be the first Regional Center for Research on Aging. The work of the center will be directed toward the ultimate goals of slowing the aging process, promoting the health of elderly persons, and preventing or delaying their institutionalization. Plans for the center were announced at a recent dinner addressed by Surgeon General Leroy E. Burney of the Public Health Service. The Service is aiding in the support of the center through a grant recommended and made jointly by the National Heart and Mental Health Institutes.

Speaking at the dinner, Dr. Burney said that this marks "the first time that funds appropriated by Congress to the Public Health Service for aid to research have been awarded to help in the estab-

lishment of a large-scale regional research center. And it is the first time, to my knowledge, that one of the leading institutions of higher learning in this country has set out, in a deliberate fashion, to mobilize its extensive resources in search of better understanding of the processes of aging—one of modern man's most challenging problems."

Ewald W. Busse, M.D., chairman of the Duke Medical School's Psychiatry Department and of the Duke University Council on Gerontology, will be principal investigator for the center's research program, expected to be in operation by the end of 1958. Dr. Busse, outlining plans explained that a Panel on Interdisciplinary Research, selected from the several departments of the university, will determine the research policies. Specific aims of the center, include encouragement and support of fundamental research concerned with the phenomenon and health problems of aging; training of investigators for research in the problems of aging; and development of a source of scientific knowledge for state and local government as well as for private groups and individuals.

Planning in Mental Retardation

The 80-year-old American Association on Mental Deficiency is carrying on a three-year project supported by the National Institute of Mental Health. The aim of "Technical Planning in Mental Retardation" is to "appraise activities and trends in mental retardation in research, training, and program development, delineating promising areas for emphasis and development, and offering encouragement and assistance in these areas to qualified individuals, agencies and institutions."

Three technical subcommittees of five members each constitute as well a Project Advisory Council providing consultation and guidance to the Administrative Board and the staff.

Professor Herschel Nisonger, director, Bureau of Special and Adult Education, Ohio State University, is chairman of the board and director of the project. Chairman of the Research Subcommittee is Donald B. Lindsley, Ph.D., chairman, Department of Psychology, University of California, Los Angeles, on which Benjamin Pasamanick, M.D., director of research, Columbus Receiving Hospital, also serves. Milton Terris, M.D., assistant dean, University of Buffalo Medical School, is chairman of the Subcommittee on Training of Personnel; Paul V. Lemkau, M.D., professor, Johns Hopkins School of Hygiene and Public Health, is chairman of the Subcommittee on Program Development.

In June, 1957, the project began the publication of a four-page news letter. The first issue reported the background and current activities of the project and its three subcommittees. One current activity of the staff is compilation of abstracts of the literature for publication in the Journal of the American Association on Mental Deficiency.

Behavioral Research Grant

The Albert Einstein College of Medicine, New York City, through a grant from the National Institute of Mental Health, has begun a six-year pilot training and research program. This will stress the interrelation of many branches of the biological and physical sciences as the key to a better understanding of the nervous system and human behavior. The program reportedly marks a new emphasis in both medical education and research by cutting across departmental lines and promoting an interwoven pattern of scientific research and thinking. Provision is made for awarding 36 fellowships on both predoctoral and postdoctoral levels.

Shellfish and Vending Machine Guides

"The Vending of Foods and Beverages—a Sanitation Ordinance and Code" and "Sanitary Control of the Shellfish Industry, Manual of Recommended Practice—Part II: Harvesting and Processing" are two recent publications of the Public Health Service. The former was prepared by the cooperative action of the Milk and Food Program of the Service and of the Public Health Committee of the National Automatic Merchandising Association.

The shellfish industry publication is the third revision of the guide on Harvesting and Process. It outlines the basic sanitary standards that should be observed in cooperative state-industry-Public Health Service programs for the certification of interstate shellfish shippers. Included are recommended sanitation practices for harvesting boats and establishments that process oysters, clams, or mussels. Both are available from the Government Printing Office, Washington 25, D. C.; 15 cents for the Food Vending; 35 cents for Shellfish Guide.

Also being revised is Growing Areas, Part I of the Shellfish manual. It deals with Growing Areas and will soon be in publication.

Florida Air Pollution Commission

The 1957 Florida Legislature established a nine-member Air Pollution Control Commission to assist in carrying out the provisions of the state's air pollution control act. The State Board of Health is charged with the control of air pollution in accordance with regulations promulgated by the Commission.

The Commission, appointed by Governor Leroy Collins, is composed of a representative each from the State Board of Health, the Department of Agriculture, the Development Commission, the Industrial Commission, and five non-governmental representatives. One of these must be a professional engineer experienced in sanitary engineering, two representatives from industry, and two citizens representing the general public. Among appointees to the Commission are A. V. Hardy, M.D., director of laboratories, State Health Department, and E. R. Hendrickson, associate research professor, University of Florida College of Engineering. Dr. Hardy is Secretary of the APHA Laboratory Section while Dr. Hendrickson is a member of the Committee on Laboratory Methods for the Examination of Air.

League of Red Cross Societies Cited

The League of Red Cross Societies has been awarded the 1957 Nansen Medal by the United Nations High Commissioner for Refugees. This was the unanimous decision of the Nansen Medal Award Committee, meeting at the Palais des Nations, Geneva, on May 17, 1957.

In making the award, the committee reportedly "had particularly in mind the outstanding services of the League of Red Cross Societies on behalf of the new Hungarian refugees. The League's timely action on a world-wide basis on behalf of the Hungarian refugees clearly demonstrated the power of international solidarity when harnessed for the common good; the League had been active not only in Austria and Yugoslavia but had been responsible for a broad-based non-sectarian effort of fund-raising in many countries of the world and had also played a vital part in the resettlement of Hungarian refugees in many of these countries." The award was presented at a special ceremony in Geneva on September 16, 1957.

The Nansen Medal Award, instituted in 1954, was named after the late Dr. Fridtjob Nansen and is awarded annually for outstandingly meritorious

work on behalf of the refugees under the High Commissioner's mandate.

Honorary Peruvian Professorships

The first honorary professorships reportedly ever awarded by the Faculty of Sanitary Engineering of the National University of Engineering of Peru have gone to two faculty members of the University of North Carolina School of Public Health. E. G. McGavran, M.D., and Dan Okun, Sc.D., respectively dean, and professor and head of the Department of Sanitary Engineering of the school, received the awards at a special ceremony in Lima, Peru, July 11 which culminated three years of "good neighbor" assistance from the Chapel Hill school to the Peruvian institution. The Gold Medallion awards presented to Drs. McGavran and Okun by Dr. Roberto L. Valverde, president of the National Engineering School, are the insignia of the highest academic rank.

For the past three years the UNC School of Public Health has assisted the National Engineering School in creating its Department of Sanitary Engineering. Assistance in the establishment of technical laboratories, in the design of courses for sanitary engineers, and in the actual teaching of students has been provided by visiting faculty from Chapel Hill.

Study of Congenital Heart Disease

The Chicago Heart Association has created the Congenital Heart Institute for the purpose of carrying on a 10-year study of congenital heart disease. Maurice Lev, M.D., a full-time investigator, using facilities provided by the Hektoen Institute is studying the life history and pathology of defects of the heart. Clinic, laboratory, and pathologic data will be assembled for cases of children dying of congenital heart defects.

The Chicago Heart Center, the five medical schools of the area, and the city and state health agencies are cooperating in the study, which it is estimated will cost about $50,000 a year.

Chlorine Dealers

A list of chlorine repackagers in the United States has been prepared by the Chlorine Institute and is available for free distribution. The single mimeographed page lists by state and city the names of repackagers and whether or not they repackage in cylinders or in ton containers. Twenty-one states and Hawaii and 44 cities are listed. The Chlorine Institute, 342 Madison Avenue, New York 17, N. Y.

PERSONALS

C. L. AHLUWALIA, M.B., D.P.H.,† former assistant director of public health, epidemiology, and social insurance in Hyderabad, India, has been promoted to be director of public health, Andhra Pradesh.

OTIS L. ANDERSON, M.D.,* chief, Bureau of State Services, has been assigned to a new top-level post as Assistant Surgeon General for Personnel and Training. He has been succeeded in the Bureau of State Services by DAVID E. PRICE, M.D.,* former deputy chief.

GUILLERMO ARBONA, M.D., M.P.H.,* professor of public health, University of Puerto Rico, San Juan, has resigned to become secretary of health, Puerto Rico, succeeding JUAN A. PONS, M.D.,† resigned.

RALPH C. BARNES,† former assistant chief, Training Branch, Communicable Disease Center, Atlanta, has been transferred to Denver as chief, Communicable Disease Control Services, Region VIII, Public Health Service.

HARLE V. BARRETT, M.D., M.P.H.,* former health officer, Kay County, Okla., has been appointed assistant professor and acting director, Department of Preventive Medicine and Public Health, The Creighton University School of Medicine, Omaha, Neb.

MORRIS BARRETT,† former director, Alcoholism Center, Grand Rapids (Mich.) Health Department, is now program associate in respiratory diseases, Program Development

* Fellow.
† Member.

Services, National Tuberculosis Association, New York, N. Y.

A. A. BASKOUS, M.P.H.,† former senior sanitary engineer, has recently been appointed chief, Camp and Housing Section, Bureau of Environmental Sanitation, New York State Department of Health, Albany.

COL. PHILIP R. BECKJORD, MC,* former director, Division of Preventive Medicine, Walter Reed Army Institute of Research, has been appointed assistant chief, Preventive Medicine Division, Office of the Army Surgeon General, Washington, D. C.

SIR JOHN A. CHARLES, K.B.E.,* chief medical officer, British Ministry of Health, was elected chairman of the Executive Board of the World Health Organization at the 20th session held in Geneva in May, 1957.

H. J. DODGE, M.D., M.P.H.,† former professor and acting head, Department of Preventive Medicine and Public Health, University of Colorado School of Medicine, has been appointed professor of epidemiology, University of Michigan School of Public Health, Ann Arbor.

HELEN E. ELLIOTT, M.D., former assistant director, Central Islip State Hospital, has been appointed deputy assistant commissioner, New York State Department of Mental Hygiene.

FRANZ GOLDMANN, M.D.,* is on leave of absence from the Harvard University School of Public Health to become director, Health Services Coordination Study, Council of Jewish Federations and Welfare Funds, Inc., New York City, succeeding MILTON I. ROEMER, M.D., M.P.H.,* resigned.

PHILIP HALLEN,† former student, Yale University School of Public Health, is now administrative resident, Massachusetts Department of Mental Health, Boston.

SARAH HARDWICKE, M.D.,† former secretary, Council on Professional Practice, American Hospital Association, is now associate clinical director, Hospital Program, Welfare and Retirement Fund, United Mine Workers, Washington, D. C.

JOHN H. HAYES,† hospital consultant and former director, Lenox Hill Hospital, New York City, received the 1957 Distinguished Service Award of the American Hospital Association at the Association's recent annual convention in Atlantic City.

ROBERT C. HUNT, M.D.,† former director, Erie County (N.Y.) Community Mental Health Services, has been appointed director, Hudson River State Hospital.

SELIG KATZ, M.D., M.P.H.,† former assistant health officer, Anne Arundel County, has been appointed deputy state health officer and Calvert County (Md.) health officer.

FREDERICK M. KRIETE, M.D.,* assistant chief of preventive medical services, California State Health Department, has been appointed deputy state health director, a position created at the 1957 session of the Legislature.

PAUL E. LAUGHLIN,† former technical director, Dried Fruit Association of California, has been appointed sanitarian, Nabisco Sanitation Department, National Biscuit Company, New York, N. Y.

COL. ARTHUR P. LONG, MC,* former chief of preventive medicine, Sixth U. S. Army, has been appointed chief, Preventive Medicine Division, Office of the Army Surgeon General, Washington, D. C.

PAUL D. MACLEAN, M.D., associate professor of physiology, Yale University School of Medicine, on leave for the past year as a senior postdoctoral fellow of the National Science Foundation, has been appointed chief, Section on Limbic Integration and Behavior, Basic Research Branch, National Institute of Mental Health.

A. HELEN MARTIKAINEN,* chief, Health Education of the Public Section, WHO, received an honorary Sc.D. degree from her Alma Mater, Bates College, at the 1957 Commencement for "her distinguished career in public health."

NORMA MILLER, former public health nurse, Allegan County (Mich.) Health Department, is now supervisor of nurses, Shiawassee-Livingston District Health Department with headquarters in Howell.

ROBERT A. MOORE, M.D., former vice-chancellor of the health professions, University of Pittsburgh, has been appointed dean, College of Medicine, the Downstate Medical Center, State University of New York, Brooklyn, succeeding HOWARD W. POTTER, M.D., retired.

RUSSELL H. MORGAN, M.D., professor of radiology, Johns Hopkins University, has been named special consultant to the Public Health Service on the public health aspects of radiation.

JUAN MORODER, M.D.,* has returned to Chile after several years with the World Health Organization and has been appointed director, National Cancer Institute, and professor of hygiene and public health, University of Chile Medical School, Santiago.

FRANCES R. OGASAWARA, M.S.,† former health educator, Tuberculosis League, Waterbury, Conn., is now director of health education, Massachusetts Tuberculosis and Health League, Boston.

I. OLITZKY, Ph.D.,* principal bacteriologist,

* Fellow.
† Member.

Philadelphia Department of Health, has resigned to join the staff of Cappel Laboratories, Inc., West Chester, Pa.

GEORGE T. PALMER, Dr.P.H.,* consultant in public health training and administration, California State Department of Health, Berkeley, has retired from state service after 45 years in public health.

JOHN R. PAUL, M.D.,* professor of preventive medicine, Yale Medical School, has received the David Russell Lyman gold medal for "outstanding productiveness and service to public health."

L. J. PETERSON, M.S.P.H.,* chairman of the APHA Executive Board, and formerly Idaho state health director, has accepted appointment to the newly established administrative position of assistant chief, Bureau of Crippled Children Services, California State Department of Health, Berkeley.

FRANZISKA W. RACKER, M.D.,* former consultant in public health medicine, Professional Examination Service, APHA, has been awarded a two-year NFIP fellowship in rehabilitation for training in the Department of Physical Medicine and Rehabilitation, Bronx Municipal Hospital Center (in affiliation with The Albert Einstein College of Medicine).

MATTHEW J. REHAK, formerly with the Baltimore Office of Chief Medical Examiners and the Pharmacology Department, University of Maryland School of Medicine, has been appointed toxicologist, Bureau of Laboratories, Connecticut State Department of Health.

NORBERT REINSTEIN, M.P.H.,* former planning director for health services, United Community Services, Detroit, is now program director, Tuberculosis and Health Society of Wayne County, Mich.

F. CARLYLE ROBERTS, Jr.,† former officer in charge, Pittsburgh Field Training Station for sanitarians, is now directing a similar training center in Oklahoma City.

BERNARD F. ROSENBLUM, M.D., M.P.H.,* Senior Surgeon, USPHS, former director, Division of Preventive Medicine, New Mexico Department of Public Health, has been transferred to the North Carolina State Board of Health, Raleigh, as chief, Venereal Disease Control Section.

WILLIAM B. ROSSMAN, M.D., former director, Bureau of Mental Hygiene, State Department of Health, has been appointed director of the new West Virginia State Department of Mental Health.

LUCY SIKORSKY, M.D.,† former medical director, Maricopa (Ariz.) County Health Unit, has resigned because of ill health.

I. W. SOUTHERN, M.P.H.,* formerly with the Arabian American Oil Company, Dhahran Saudi Arabia, is now acting plant sanitarian, Kroger County Manufacturing Division, Cincinnati, Ohio.

ERNEST L. STEBBINS, M.D.,* dean, Johns Hopkins University School of Public Health, and chairman, American Board of Preventive Medicine, recently made a two-week tour of U. S. Air Force medical facilities in Europe to observe the residency program in aviation medicine conducted by the Randolph Air Force Base institution which each year assigns two of the flight-surgeons-in-training to the Air Forces in Europe.

DONALD R. TAVES, M.D., M.P.H., has been appointed health officer of Shasta County, Calif., succeeding JOHN E. WOLF, M.D., resigned.

ANDREW J. TOMAN, M.D., former medical director, Chicago plant, Armour & Co., has been named health officer of Berwyn Township, Ill., succeeding NICHOLAS FRANKOVELGIA, M.D.,* resigned.

THOMAS B. TURNER, M.D.,* professor of bacteriology, Johns Hopkins School of Hygiene and Public Health, has been appointed dean of the Hopkins Medical School.

BORIS E. VANADZIN, M.D., has been made public health physician, Pittsfield Office, Western District, Massachusetts State Department of Health.

JOHN VEENSTRA, former teacher, Hudsonville Public Schools, is now sanitarian, Shiawassee-Livingston District Health Department, Howell, Mich.

THEODORE C. WILLERFORD, M.S., has been appointed senior sanitary engineer, Bureau of Sanitary Engineering, Connecticut State Health Department.

G. DOROTHY WILLIAMS,* principal nutritionist, Bureau of Nutrition, New York City Department of Health, has resigned to become nutrition instructor, Hartwick College, Oneonta, N. Y., and teaching and clinic dietitian, Mary Imogene Bassett Hospital, in Cooperstown.

JULIUS L. WILSON, M.D.,† director of Henry Phipps Institute, Philadelphia, has been appointed chief consultant to the Veterans Administration tuberculosis service.

ALFRED YANKAUER, M.D.,* director, Bureau of Maternal and Child Health, New York State Department of Health, is on a two-year leave of absence as visiting professor of pediatrics, Madras Medical College, India, under the auspices of the World Health Organization.

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* Fellow.
† Member.

DEATHS

HUBERT D. CROW, M.D.,† director of Virginia State Health Department's Medical Training Section, and also health director for Suffolk and the Counties of Isle of Wight, Southampton, and Nansemond (Health Officers Section).

WILLIAM DE KLEINE, M.D., M.S.P.H.,* who organized the Red Cross Blood Bank Program during World War II, on September 20 (Health Officers Section).

EUGENE B. FERRIS, M.D., medical director, American Heart Association.

WALTER A. JAMIESON, D.Sc.,* retired director of biological research for Eli Lilly and Co. (Laboratory Section).

JOHN O. MCNEEL, M.D.,* medical director, St. Louis Labor Health Institute (Medical Care Section).

ELIZABETH I. PARSONS, D.Sc.,* medical bacteriologist, General Diagnostic Bacteriology Unit, Communicable Disease Center, U. S. Public Health Service, Chamblee, Ga. (Laboratory Section).

CONFERENCES AND DATES

American Public Health Association, 85th Annual Meeting. Cleveland, Ohio. Headquarters: Public Auditorium, November 11–15.

State and Regional Public Health Meetings:

Connecticut Public Health Association. Fairfield State Hospital, Newtown. November 21.

Mississippi Public Health Association. Jackson. December 4–6.

The Public Health Association of New York City. Donnell Public Library Branch, New York, N. Y. November 26.

Southern California Public Health Association. Huntington-Sheraton Hotel, Pasadena, December 6.

Tennessee Public Health Association. Maxwell House Hotel, Nashville. December 4–6.

Meetings of Other Organizations Coming in November, December, 1957, and January, 1958:

American Dental Association. Miami, Fla. November 4–7.

American Public Welfare Association. Chicago, Ill. Edgewater Beach Hotel. December 4–7.

Association of State and Territorial Health Officers. Washington, D. C. November 1–9.

Inter-American Conference on Rehabilitation. Guatemala City, Guatemala. November 8–12.

National Association of Mental Health, Inc. Atlantic City, N. J. November 21–23.

National Committee on the Aging—NSWA. New York, N. Y. December 10–11.

National Social Welfare Assembly. New York, N. Y. December 12–13.

Pan American Medical Association—Tenth Inter-American Congress. Mexico City, Mexico. November 18–22.

United Cerebral Palsy Associations. St. Louis, Mo. November 22–24.

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1. J. Lab. & Clin. Med., *45*:679, 1955.
2. Bull. World Health Organ., *10*:823, 1954.

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